Government Activities in the North 1983-1984

Annual Northern Expenditure Plan 1984-1985

Published under the authority of the
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le Nord 1984-1985*

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Minister's Foreword

As Minister responsible for coordinating the government's policy and its application in Canada's North, I am pleased to present the second combined version of the related publications, "Government Activities in the North 1983-84" and "Annual Northern Expenditure Plan 1984-1985".

The publication is designed to provide as complete a picture as possible of the activities and related expenditures, both in and for the North, of federal departments and agencies and the two territorial governments.

The Hon. David Crombie, P.C., M.P.
Minister of Indian Affairs and
Northern Development

Introduction

Over the past number of years, the Department of Indian Affairs and Northern Development has published annually Government Activities in the North (GAIN), a narrative review of the northern activities of federal departments and agencies as well as those of the territorial governments.

A companion publication, Annual Northern Expenditure Plan (ANEP), a compilation of planned, forecast and actual expenditures related to those activities detailed in GAIN has also been produced.

Regular readers will recall that the 1981-82 GAIN included, at the end of each departmental and agency section, the total forecast (1981-82) expenditure by that organization as well as a breakdown by Northern Objective of that spending. This was the first step in an evolutionary process designed, in the long-term, to combine the information and data contained in GAIN and ANEP respectively into one publication, and thus increase the usefulness of the information and data provided.

Accordingly, as was evidenced in the publication "Government Activities in the North 1982-1983/Annual Northern Expenditure Plan 1983-1984", the two books were combined into one volume and the GAIN portion saw the activities of the reporting agencies [1] displayed under one or more of the Economic Functions [2] under which ANEP expenditures are reported.

This format was found to be not entirely satisfactory, because, in the case of larger departments, the activities of which involve a number of Economic Functions, it was of course necessary to check through each section of the book to obtain an overall appreciation of the scope of operations of those departments.

To avoid this difficulty, a further revision of format has been adopted. Rather than breaking down the activities by Economic Function, each agency's complete GAIN report is presented under its agency title, and headings have been inserted to indicate that the section immediately following relates directly to the specific economic function shown in the heading.

To relate spending by economic function (ANEP) by a given agency for reported 1983-84 activities, reference should be made to the table "1983-84 *Forecast* Expenditures by Agency by Economic Function" found on Page 14 of the ANEP section of this publication.

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1 The term "agency" (when not otherwise modified) includes federal government departments, agencies and crown corporations, and the governments of the two territories.

2 The Economic Functions are defined on Page 13 of the GAIN section of this publication.

Government Activities in the North 1983-1984

Contents

Agriculture Canada	8
Canada Mortgage and Housing Corporation	9
Canada Post	11
Canadian Broadcasting Corporation	13
Canadian National	14
Canadian Transport Commission	15
Communications Canada	16
Department of Justice Canada	19
Eldor Resources Limited	19
Employment and Immigration Canada	20
Energy, Mines and Resources Canada	23
Environment Canada	49
External Affairs Canada	64
Federal Environmental Assessment Review	65
Fisheries and Oceans	66
Health and Welfare Canada	78
Indian and Northern Affairs Canada	81
Labour Canada	103
National Defence	106
National Energy Board	110
National Film Board	112
National Museums of Canada	114
National Research Council Canada	118
Northern Canada Power Commission	121
Northern Pipeline Agency Canada	123
Northern Transportation Company Limited	124
Public Service Commission of Canada	125
Public Works Canada	126
Regional Industrial Expansion	129
Revenue Canada	132
Royal Canadian Mounted Police	133
Secretary of State Canada	135
Supply and Services Canada	137
Transport Canada	138
Veterans Affairs Canada	148
Northwest Territories	149
Yukon Territory	175

Agriculture Canada

Health of Animals Directorate

Economic Function: Long Range Research

Research Activities 1983-84

A study of diseases of bison is underway in Wood Buffalo Park and its environs. A cooperative project with Parks Canada and the N.W.T. Wildlife Service, with active participation of local lumbers and trappers and members of the Dene and Metis Bands, primary emphasis is to determine the prevalence of brucellosis and tuberculosis in bison and in other wild animals in the area.

A research project, based at the Animal Pathology Laboratory, Sackville, N.B., is designed to further characterize strains of the parasitic worm, *Trichinella spiralis* from muscles of various wild carnivores submitted from across the country. Arctic strains of this zoonotic parasite are able to survive refrigeration techniques and represent a threat to the food chain.

In Lethbridge, Alberta, the study on "The Arctic Fox: Rabies infection and age structure from trapline returns" continues. The study may be expanded to try to determine the seasonal movement of juvenile foxes and its relationship to the incidence of rabies.

Food Production and Inspection Branch

Food Inspection Directorate

Meat Hygiene Division

Review 1983-84

The annual slaughter of reindeer, usually conducted in February or March, by the firm "Canadian Reindeer (1978) Limited" of Tuktoyaktuk, Northwest Territories, did not take place this year but is anticipated in the fall of 1984.

The Meat Hygiene program continued to provide inspection staff to enable northern people them to slaughter and process local animals for distribution to potential domestic and foreign markets. Expansion to include other species, such as musk oxen, is not anticipated at the present time.

Land Resource Research Institute

Responsibilities

The Institute is responsible for national programs relating to land resources and agrometeorological services and carries out soil classification rsearch, soil and vegetation surveys, as well as studies in agricultural land use evaluation and soil degradation.

Review 1983-84

At the request of the Geological Survey of Canada, field studies were conducted to establish relationships between soils and surficial deposits in central Yukon. Agricultural capability assessments were prepared for the Yukon government at selected locations. Soil temperature monitoring was continued to characterize the soil temperature regime.

A permanent soil survey office was established in Whitehorse. Agronomic fixed experiments were conducted in cooperation with the Beaverlodge Research Station of Northern Alberta.

Soil information input was provided for the 4th International Permafrost Conference covering Northern Yukon and the Mackenzie Delta of Northwest Territories and the information was published in the Guide Handbook.

Biosystematics Research Institute

Responsibilities

The program of the institute emphasizes collection, development and taxonomic study of organisms of special interest to Canadians. The Institute prepares and transfers interpretive material to workers in related fields; and provides the National Identification Service utilized by clients throughout Canada.

Review 1983-84

Insect and plant specimens were collected in the Yukon, including fungi, vascular plants and insects for research studies and for incorporation into the collection of the Institute. A service providing identification of insects plants and fungi was provided.

Canada Mortgage and Housing Corporation

Economic Function: Welfare

This report relates to the operating year 1 January to 31 December 1983.

Responsibilities

Canada Mortgage and Housing Corporation (CMHC), the federal housing agency, is responsible for housing and other programs under the National Housing Act. It insures residential mortgage loans made by approved lenders and provides direct financing to the Territorial housing corporations and private non-profit organizations for new construction as well as the rehabilitation of existing houses. Northern day-to-day activities are administered by branch offices in Yellowknife and Whitehorse.

Review 1983

Northwest Territories

CMHC was involved in the construction, financing and/or rehabilitation of 657 units in the Northwest Territories. Of these units, 229 were financed directly by CMHC through cost shared programs with the Northwest Territories Housing Corporation (NWTHC). These programs provide subsidized rental housing in many of the smaller and isolated communities in the Territories. Seventy new units were built and 159 older existing units were rehabilitated. Twenty-one of these were completed under the Section 40 F/P Rural and Native Housing program which provides assistance to low income families in rural areas or in communities of less than 2500 residents. CMHC capital funding for construction and rehabilitation under the cost-shared programs totalled $12.9 million. In addition, CMHC and NWTHC will share the operating subsidies in the years to come.

Through CMHC's Cooperative and Non-Profit Housing Program, 20 new units were approved for the Hillside Housing Co-op at Frobisher Bay. CMHC provided $3.2 million of mortgage insurance to the lender and will provide a maximum annual subsidy of $303 000.

Research Project - Insulated Wall-panel system, NWT

In addition to the mortgage insured for the Co-operative and Non-Profit project, CMHC insured mortgages for 216 new and existing homeownership units and 31 rental units. A total of $17.6 million in mortgage insurance was issued by CMHC during the year. A further 29 households were provided with direct mortgage financing after being turned down by approved lenders active in the area.

Under its rehabilitation programs, CMHC provided funding for the rehabilitation of 132 units for a total expenditure of $0.7 million. Of this, CMHC directly delivered the funding for 32 units through the Residential Rehabilitation Assistance Program (RRAP). On behalf of CMHC, the NWTHC delivered the funding under the Emergency Repair Program (ERP) for 48 units and under the Enriched Emergency Repair Program (EERP) for 52 units. In addition to these rehabilitation programs, the Canadian Home Insulation Program (CHIP) which is administered by CMHC on behalf of Energy Mines and Resources, provided 658 grants totalling $295 816 to homeowners to assist them in upgrading the insulation in their houses.

Through the Canadian Homeownership Stimulation Plan (CHOSP), federal $3 000 grants were made to qualifying purchasers of new and existing homes. This program provided a stimulus to the housing industry and during the year 46 grants totalling $138 000 were committed.

Total federal housing subsidies estimated at $19.2 million were provided to residents of the Northwest Territories.

Economic Function: Short Range Research

During the year an evaluation of an insulated wall-panel system for use in the construction of houses in the NWT was initiated. In addition, research projects continue from previous years to evaluate the performance of house designs in areas of structural integrity, energy conservation, maintenance and cost, with the objective of improving existing dwelling units and developing guidelines for future housing.

Yukon

Economic Function: Welfare

During 1983, the Whitehorse Branch of CMHC insured a total of $10.5 million of residential mortgage financing in the Yukon for the construction or acquisition of 195 units. Ninety percent of these funds was used for the acquisition of existing single-family residences and the remainder for new single-family units and the construction of a senior citizens rental housing project.

The Corporation provided direct capital for 25 units under Section 59 On-Reserve Rental as well as annual subsidies totalling $219 000 on these units under Section 56.1 Private Non-Profit Program.

In 1983, the Council of Yukon Indians (CYI) received approximately $112 000 from CMHC in the form of a Sustaining Grant, to enable the development of strong local housing delivery systems. A further $32 500 was made available to CYI for Client and Cadre Training. In addition, $108 000 was provided to CYI through the Emergency Repair Program (ERP) to deal with serious emergency repairs needed to bring 73 rural housing units up to a reasonable standard of health and safety on a short-term basis.

Total Activity Approved — 1983

	No of Units	Amount $ 000
NWT		
(New and Existing)	525	32 171
(Rehabilitation and Repair)	132	696
(Homeownership Assistance — CHOSP)	46	138
Yukon		
(New and Existing)	220	11 416
(Rehabilitation and Repair)	162	489
(Homeownership Assistance — CHOSP)	189	567
(Renovation — CHRP)	63	137

Borealis Cooperative Project, Yellowknife, NWT

Through delivery agreements with the Teslin Indian Band and the Council for Yukon Indians, CMHC provided $342 000 in funds during 1983 for the repair of 74 housing units under the Emergency Repair Program. Approximately $300 000 of these funds were forgiveable.

In September of 1983, the City of Whitehorse entered into an Agreement with CMHC for delivery of the Urban RRAP program in Whitehorse. Yukon Housing Corporation is delegated to deliver this program on behalf of the City. During the fourth quarter of 1983, CMHC provided $39 000 in the form of 31 loans under the Urban RRAP program to repair and improve 15 housing units. Under the Canadian Home Insulation Program (CHIP), CMHC administered the delivery of 175 grants totalling $73 957 were approved.

Throughout the year, 189 grants totalling $567 000 were also approved under the Canada Homeownership Stimulation Plan (CHOSP). The majority of the $3 000 grants were to homeowner builders.

During 1983, CMHC provided forgiveable loans under the Canada Home Renovation Plan (CHRP) totalling $137 000 to 63 homeowners in the Yukon.

Canada Post

Economic Function: Communications

Canada Post Corporation is a social business that links all Canadians from the largest urban centres to the remotest town in the Arctic. One of the most challenging parts of this task is to provide mail service to the vast area making up the Yukon and Northwest Territories.

Transportation is the backbone of any postal service, and in the Far North it means, to a large extent, air transportation. However, other means of delivery are used as well. For example, the Dempster Highway, which crosses the Arctic Circle and continues on to Inuvik, provides Canada Post with an alternative method of delivery. Should a prolonged period of adverse weather prevent aircraft from flying, then mail can be moved overland. Another change in the distribution of mail to the northern areas involves the switching of mail from courtesy bags to commercial flights.

For years, mail destined for mining or oil exploration companies was placed in company bags (courtesy bags) and flown in by company aircraft to their personnel. Now the majority of such mail is carried on scheduled commercial flights. Most of the mail is carried by fixed-wing aircraft, but helicopters also have a role to play in delivering northern mail. Mail addressed to the crews on government-owned icebreakers or commercially owned offshore drilling rigs is dispatched and received from onshore locations by helicopters.

Since becoming a Crown corporation in 1981, Canada Post has introduced a number of initiatives to respond to its customers' needs in a more cost-effective manner. The Corporation was reorganized into nine Divisions. Four of these have northern mail service as one of their responsibilities. Divisional Head Offices are located in the areas they serve, close to the geographic area, thus shortening the lines of control for northern service. The Pacific Division, with its Head Office in Vancouver, is responsible for the Yukon and the section of the District of Mackenzie that contains Watson Lake and Dawson Creek. The Foothills Division, with Head Office in Edmonton, is responsible for the remainder of the District of Mackenzie and the western half of the District of Franklin.

The Whitehorse Post Office provided the display area for ice sculptures during this year's "Sourdough Rendezvous" the community's annual winter carnival.

The Mid-West Division, with Head Office in Winnipeg, is responsible for the District of Keewatin (west coast of Hudson Bay). The Montreal Division, with Head Office in Montreal, is responsible for the eastern half of the District of Franklin and the part of Quebec that extends north of the 60th parallel. The post office at Sanikiluaq, Belcher Islands, is south of the 60th parallel, but since this is an island in Hudson Bay, it is served by Canada Post's northern service and comes under the jurisdiction of the Montreal Division.

Below these Divisional levels, additional reorganization has been carried out to meet local requirements. For example, postmasters in Hay River, Inuvik, and Yellowknife are responsible for all postal operations within their respective zones. This provides postmasters in the surrounding settlements with a postal official who is relatively nearby to call on for assistance or guidance.

Review 1983-84

In 1983 Yellowknife became the second northern community to be given Priority Post (Courier) service. Now both Yellowknife and Whitehorse have both home and business delivery of parcels. Yellowknife, the capital of the Northwest Territories, was also the site of a special event in 1984. On 15 March the first new stamp issued in 1984 was unveiled in Yellowknife. The stamp commemorated the 50th anniversary of the community, which began as a gold mining site and has since become the capital and the major business centre of a vast northern territory.

Canada Post also participated in other events of local importance. In Dawson City, the stately old post office, which was built at the turn of the century, was restored and is now a prime tourist attraction. In Whitehorse postal employees played a major part in the Yukon Sourdough Rendezvous, a mid-winter festival that celebrates the early gold-rush days. The front yard of the post office was also the site for ice sculptures. In Inuvik the post office held an open house to mark the 25th anniversary of both the community and Canada Post's arrival in that community.

Plans for 1984-85

Detailed plans for the northern postal service during the fiscal year 1984-85 are based on responding to customers, needs with efficient, cost-effective service. Shifts in population or changes in community requirements may necessitate further changes. For example, a test program is being carried out in Yellowknife, and elsewhere, using community mail boxes, which are located at convenient intervals in residential areas so that residents can pick up their mail without having to go to the post office. If this cooperative test between communities and Canada Post proves feasible and desirable, it may be expanded to other sites in the North.

Despite the special problems posed by the sheer physical size of the North, Canada Post Corporation will continue to maintain and improve postal service to customers in this region through careful and efficient programs based on evolving communications needs.

1983
Post Offices North of the 60th Parallel

1.	Eureka	41.	Ross River
2.	Grise Fiord	42.	Destruction Bay
3.	Mould Bay	43.	Carmacks
4.	Resolute	44.	Coral Harbour
5.	Nanisivik	45.	Tungsten
6.	Pond Inlet	46.	Baker Lake
7.	Arctic Bay	47.	Chesterfield Inlet
8.	Sachs Harbour	48.	Rae
9.	Clyde	49.	Yellowknife
10.	Broughton Island	50.	Rankin Inlet
11.	Tuktoyaktuk	51.	Whale Cove
12.	Holman	52.	Eskimo Point
13.	Igloolik	53.	Ivujivik
14.	Hall Beach	54.	Salluit
15.	old Crow	55.	Kangigsujuag
16.	Aklavik	56.	Quaqtaq
17.	Inuvik	57.	Haines Junction
18.	Fort McPherson	58.	Whitehorse
19.	Arctic Red River	59.	Snowdrift
20.	Cambridge Bay	60.	Carcross
21.	Spence Bay	61.	Tagish
22.	Pangnirtung	62.	Fort Simpson
23.	Gjoa Haven	63.	Teslin
24.	Coppermine	64.	Swift River
25.	Repulse Bay	65.	Watson Lake
26.	Dawson	66.	Fort Liard
27.	Elsa	67.	Fort Providence
28.	Fort Good Hope	68.	Fort Resolution
29.	Mayo	69.	Hay River
30.	Frobisher Bay	70.	Pine Point
31.	Beaver Creek	71.	Fort Smith
32.	Pelly Crossing	72.	Povungnituk
33.	Norman Wells	73.	Kangiqsuk
34.	Fort Norman	74.	Sanikiluaq
35.	Fort Franklin	75.	Pelly Bay
36.	Lac la Martre	76.	Akulivik
37.	Wrigley	77.	Lupin
38.	Cape Dorset	78.	Polaris
39.	Lake Harbour	79.	Paulatuk
40.	Faro		

Canadian Broadcasting Corporation

Economic Function: Communications

Northern Service

The CBC's Northern Service is responsible for the provision of broadcasting service to the people of Canada's North. Radio service is provided by medium and shortwave transmissions. Television service is provided by means of a national network fed by satellite.

Review 1983-84

At the request of the Minister of Communications, CBC contributed to the development of a Northern Regional Broadcast Plan. The Plan proposed enhanced CBC regional TV and radio programming in the northern parts of seven provinces and the two northern territories. The plan also includes the provision of increased technical facilities to assist native organizations in the distribution of their program material.

25th Anniversary of the Northern Service

Celebrations to mark Northern Service's first quarter-century of radio operations were held in Whitehorse, Dawson City and Yellowknife.

Training

Inter-cultural workshops were held with staff at Whitehorse, Inuvik, and Yellowknife.

Legal seminars for English and native language broadcasters were given by CBC legal staff.

Supervisory skills training was provided in the North (at Yellowknife) for the first time.

Inuit broadcasters were provided with specialized training in coverage of Legislative Assembly proceedings.

Canadian National

Economic Function: Transportation

Responsibilities

CN is responsible for providing the North with transportation and telecommunication services. Historically, this has entailed transportation to mining and forest industries, to exploration and construction projects, and telecommunications to the residential and commercial sections.

Review 1983

CN Rail provided the rail link in the intermodal transport of pipe to be used in the construction of the oil pipeline from Norman Wells, NWT to Zama Lake, Alberta. The pipe was transported by CN Rail from Edmonton to Hay River where it was transferred to barges and trucks for delivery to construction stockpile sites along the Mackenzie River between Fort Simpson and Norman Wells.

With continued drilling activity in the Beaufort Sea during 1983, CN Rail transported consumable materials to on-shore supply bases via Hay River and the Mackenzie River System.

Depressed metal prices forced CN Rail's major shipper in the North, Pine Point Mines, to shut down operations during the first six months of 1983. Shipments resumed mid-year when the mine re-opened.

NorthwesTel

Economic Function: Communications

CN's telecommunications subsidiary, NorthwesTel Inc. undertook further expansion and extension of its network.

During 1983, NorthwesTel continued with its major investment program of replacing small rural electromechanical telephone exchanges with remotely administered digital exchanges. The small digital exchanges were installed at Arctic Red River, Paulatuk, Holman, Sachs Harbour, Spence Bay, Pelly Bay, Gjoa Haven and Old Crow.

Telephone service was established to the small Yukon community of Tagish with the installation of a small new digital community dial office.

A new Digital Local and Long Distance Exchange was installed at Fort Nelson, B.C., to replace outmoded electromechanical equipment. This new exchange processes all Direct Distance Dialled toll traffic for northern B.C., as well as local service for Fort Nelson.

Touchtone service was provided at 8 additional locations making this service available to 95% (23,672) of all lines in service.

Expanded capacity was provided at four existing SA-1 crossbar exchanges.

Automatic Number Identification (ANI) capability was added at 11 locations as well as to the 1400 line SL-1 Private Automatic Branch Exchange serving the Northwest Territorial and Federal Government agencies. ANI is now available to 93% (23,671) of all working lines.

Public Mobile Telephone and Operator Number Identification services were re-homed from Hay River to Fort Nelson.

Fort Nelson area Zero Level dialled traffic was re-homed to Whitehorse Toll Operator positions.

Zero Plus Dialling capability was added at an II local switching offices.

Upgrading of the Whitehorse-Mount Berdoe (near Carmacks, Yukon) microwave system was undertaken to increase capacity from 300 to 960 voice channels. Completion is now expected in March 1984. This system is the major facility to Whitehorse for several other systems serving Dawson, Faro, and the MacMillan Pass.

A new computer was placed in service at Whitehorse to handle customer service functions including Daily Service Orders, Trouble Tickets, Directory Assistance and Plant Records.

Statistics at December 31, 1983

No. of Exchanges	B.C.	11
	Yukon	19
	NWT	34
	Total	64
Main Stations		26,960
Total Telephones		44,315
Communities Served		61
DDD Access		99.9%
ANI Availability		93%
Touch-Tone Availability		95%

Plans for 1984

Economic Function: Transportation

Rising lead and zinc prices should result in higher levels of production for Pine Point Mines and increased traffic for CN Rail in 1984. If Cadillac Explorations' new concentrator, located 160 kilometers northwest of Fort Simpson, NWT, begins operation during the year, up to 91,000 tonnes (on an annual basis) of lead/zinc concentrate traffic may materalize for movement to processors in southern Canada.

Economic Function: Communications

Phase III of a five year program to replace obsolete electromechanical exchanges with digital equipment will continue in 1984. Electromechanical equipment will be replaced at Dease Lake, Iskut, Fort Providence, Wrigley, Fort Norman, Fort Franklin, Snowdrift, Fort Liard, Telegraph Creek, Toad River, Carmacks, Aklavik, Fort Good Hope and Wonowon.

The existing communications concentrator at Mile 92 will be removed and the community served as a remote off the Wonowom digital switch.

A second concentrator system will be added to serve the area of Wolf Creek from Whitehorse exchange.

Automatic Number Identification equipment will be added at 19 locations, increasing ANI capability to 96.6% (26,916) of all working lines.

Touchtone capability will be added for availability on 97.2% (26,264) of all lines in service. All exchanges will have DDD capability.

Additional Long Distance Toll Trunks will be provided at 17 local switching offices.

Zero Plus Dialling capability will be provided to 22 additional locations.

Power generating equipment at nine of the Mackenzie Valley microwave system sites will be replaced with high efficiency engines requiring less fuel and maintenance.

Canadian Transport Commission

Economic Function:[1]

Air Transport Committee

Responsibilities
The ATC licenses air carriers for commercial air services; provides economic regulation of air carriers; investigates and surveys operations and developments of commercial air services in Canada and advises the Minister of Transport on matters relating to civil aviation.

Review 1983-1984
DEW Line contracts were awarded to Pacific Western Airlines Limited (PWA) for the vertical airlift (north-south) for the period October 1, 1983 to September 30, 1984; and to Nordair which sub-contracted part of the operation to Bradley Air Services Ltd. for the lateral airlift (east-west) for the period October 1, 1983 to September 30, 1984. Supervision and coordination of these contracts continues.

Air Fare Hearing

Phase I of the comprehensive public hearing was held in Hull Québec February 13-23, 1983. Phase II of this hearing took place in Yellowknife, NWT March 26 and in Whitehorse, Yukon March 27.

A wide range of topics including regulation of domestic advance booking and inclusive tour charters were discussed.

The ATC panel will return to Hull, April 2, to start Phase III of the hearing which will allow participants to engage in cross-examination, submit rebuttal evidence and give final oral arguments.

The panel expects to submit its report a few months later.

Air Transportation in Northern and Remote Areas

At the end of 1983, the Air Transport Committee received representations to extend the subject matter of the air fare hearing to encompass the cost of air transportation to residents of northern and remote communities. After considering the impact this would have on the scope of the hearing, and the evident need for sittings in a representative number of northern and remote communities, the Committee proposed to have a separate hearing on the matter of the cost of air transportation in northern and remote areas. This hearing will be held as soon as possible after the national air fare hearing is completed.

Helicopter Industry

The Air Transport Committee announced on March 12, 1984 that immediate steps would be taken to amend the Air Carrier Regulations to extend the trial period of partial economic deregulation of commercial helicopter services in Canada. The trial period which began in August, 1980 and was to have ended in June 1984 will now continue until December 31, 1987.

The extension was based upon the recommendations of a Committee panel which held a public hearing across Canada in March 1983 to assess the effects of partial deregulation. The panel concluded that the trial period was "significantly obscured" by the recession and it was "not yet clear how the industry would function in a freer regulatory environment."

The partial deregulation is aimed at making commercial helicopter services more flexible and responsive to market demands. Charter carriers are freed from the requirement to file long-term rates in respect of charters of 30 days or more. Licensed charter and specialty carriers are also exempted from all but the financial requirements of licensing so they can be authorized to provide services using helicopters in weight groups for which they have not previously been licensed.

The ATC will continue to monitor, in co-operation with Transport Canada, the degree of participation of foreign helicopters working in Canada so that this practice is not abused.

Water Transport Committee

The Water Transport Committee held a public hearing in Inuvik, NWT in March 1983 as part of its investigation of six applications to operate services within the Mackenzie Delta and between Tuktoyaktuk and Inuvik. A decision issued April 30, 1983 granted various licences for scheduled and unscheduled services during 1983 to Northern Transportation Company Limited; Arctic Transportation Ltd.; Jim Gordon operating as Beluga Transportation; Coastal Marine Ltd.; and David Storr and Sons Contracting Ltd.

As a result of the planned withdrawal of the Northern Transportation Company Ltd. (NTCL) from lake Athabasca water services, and in response to a request by the Minister of Transport, the Committee undertook an investigation in June, 1983, to find potential operators to replace NTCL in that region. A public hearing was held in Fort McMurray, Alberta in January, 1984 to examine four applications for 1984 licences. A. Frame Contracting Ltd., Pine Creek Construction Ltd., and Norsask Marine Ltd. were granted licences to serve all points in Lake Athabasca and its tributaries - namely Peace, Slave, Quatre Fourches and Athabasca Rivers and all points thereon, terminating at Fort Fitzgerald in the north and Fort McMurray in the south. An application submitted by Western Shipping Calgary Ltd. was denied.

Research Branch

At the request of the Government of Yukon, the Commission agreed in June 1983 to conduct an independent inquiry into the transportation requirements of the territory. The inquiry had two basic objectives; 1) to obtain and evaluate information and opinions on existing and potential surface transportation systems servicing Yukon and 2) to make recommendations. Yukon initially set a deadline of June 1984 for the final inquiry report, but subsequently asked that certain major issues be dealt with as a matter of urgency. These issues centred mainly on the future transportation needs of Cyprus Anvil Mining Corporation. The Commission, therefore, submitted a preliminary report in December 1983 and requested all interested parties to review the report and provide comments before Feburary 15, 1984 as the final report to the Yukon Government is expected to be submitted in mid-May 1984.

The Branch also issued a report entitled "The Role of Churchill in the Transportation System for Northern Canada" (No. 1983-03E).

1) CTC is not reported in ANEP.

Communications Canada

Economic Function: Communications

Responsibilities

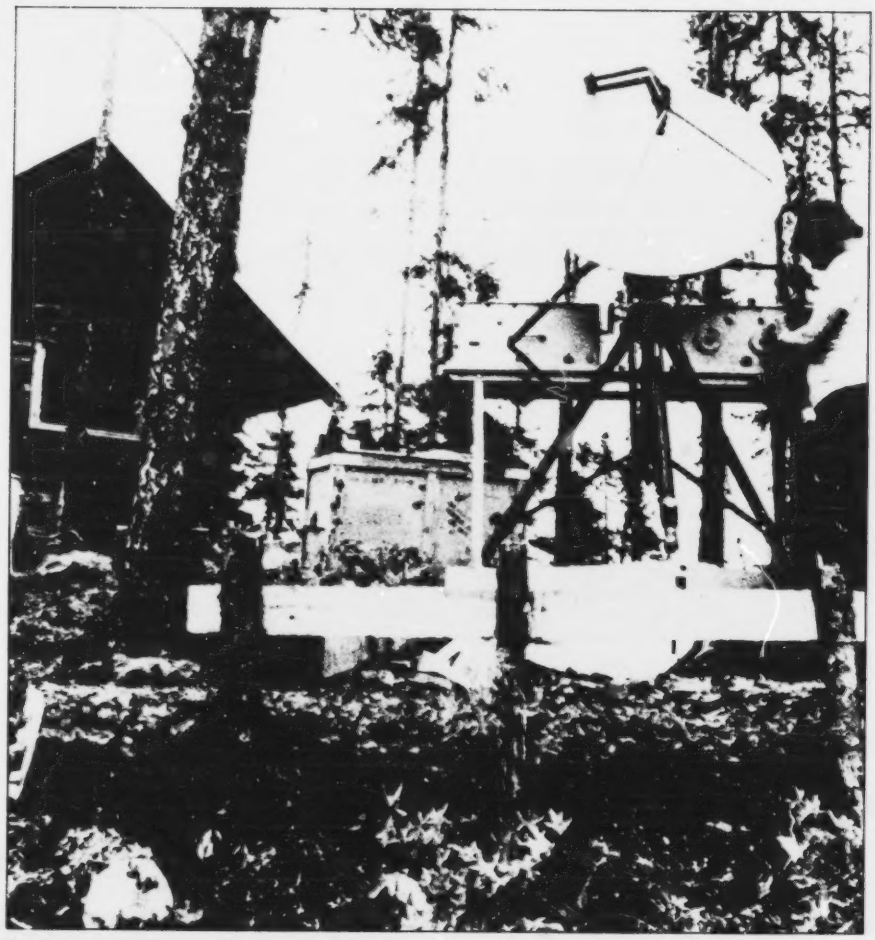
The Department of Communications, in fostering the development and operation of telecommunications for Canada, directs attention to the specific needs of northern Canadians and endeavours to recognize these needs when developing national communications policies and programs.

Review 1983-84

The Department was involved in experimental and operational activities in the North and participated in a number of joint ventures with other government departments and private groups.

The Department maintains its role as co-ordinator of northern communications planning. A major part of the Department's northern involvement is administered through its committees in the two territorial capitals, Whitehorse and Yellowknife. The DOC district manager for Yukon is a member of the Federal Interdepartmental Coordinating Committee (FICC) in Whitehorse and chairs the Communications Sub-Committee of the FICC. The DOC Central Region director who holds responsibility for the NWT and the prairie provinces is a member of the NWT Coordinating Committee in Yellowknife and chairs that Committee's Standing Group on Communications.

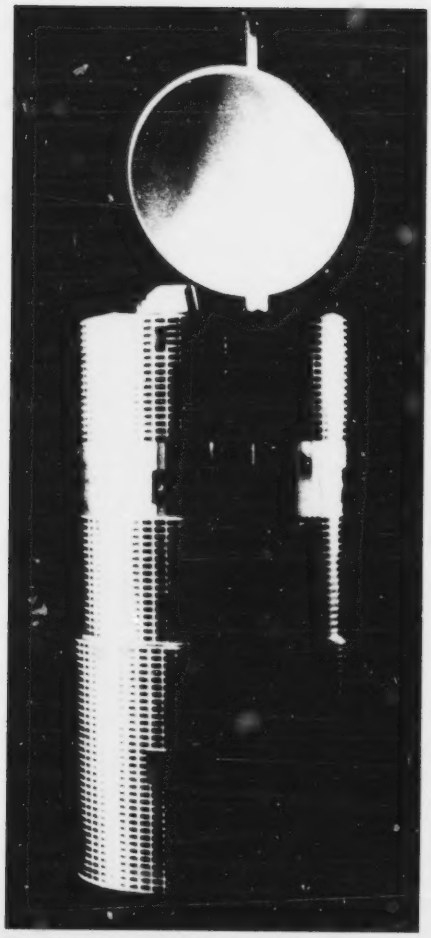
The Department continued its participation in the shared program, Summer Canada Youth Employment Program, with the Department of Employment and Immigration. This shared program, which operates in Northern Manitoba, Saskatchewan and Alberta as well as all across the NWT and Yukon, has been useful in providing basic training in communications and in introducing young people to the potential of a career in communications. With the program completely decentralized to the District Office level, DOC has created communications training positions, many of which have been filled by native students. In the 1983 fiscal year, the Central Region was able to provide 69 jobs of which 59 were provided to Native students for a total of 471 work weeks.



The Department of Communications continues to examine ways by which television services can be extended to Canada's north.

These projects helped meet DOC's objectives of broadening the use of community resource people trained in communications. The long-term potential of this program is not only in the identification of new personnel but the reduction of unemployment and creation of new opportunities.

The Department, over a seven year period, was involved in a number of experiments using the Anik-B satellite. These experiments have had significant implications for the extension of basic television services in the far North. The Anik-B satellite, the world's first dual-band satellite, operates in both the conventional 6/4 GHz band and in the new 14/12 GHz frequency band. DOC leased this latter high-frequency portion for its pilot projects.



The variety of broadcast services available on the Canadian Satellite system, such as those of Anik C, continues to grow.

The Anik-B pilot projects have now been phased out but the Central Region has begun transferring the earth stations to the government of the Northwest Territories. Thus, several communities have continued to receive communications from Canadian satellites. Seven earth stations were transferred to the Territorial Government.

The Department of Communications plays a central role on the National Liaison Committee and the Regional Liaison Committees of the Northern Native Broadcast Access Program. Under this program, Northern natives will receive $40.3 million through a four-year program to be administered by the Secretary of State. This program, a central component of the Northern Broadcasting Policy, will enable Inuit to maintain the broadcasting services they have already established and will provide Indian and Métis communication societies with an opportunity to initiate equivalent radio and television services for native audiences in the Yukon, Northwest Territories and the northern regions of seven provinces.

The Secretary of State announced, on October 20, 1983, funding of $145,419 under the Northern Native Broadcast Access Program for two new communications research projects in the NWT. This funding will enable these societies to develop effective programming and distribution plans before applying for operational funds in April, 1984. The approval of these two projects means that a total of 4 societies in the Yukon and NWT are now participating in the program.

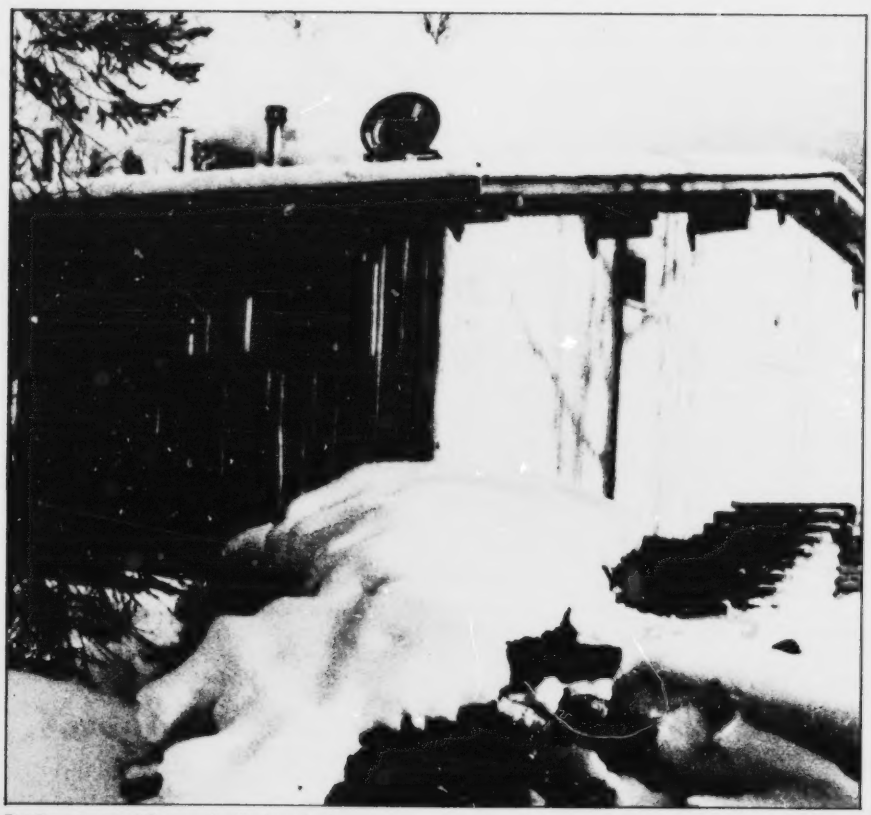
The variety of broadcast services available on the Canadian Satellite system continues to grow. Canadian Satellite Communications Inc. (CANCOM) continues to expand its service to underserved communities in rural and northern parts of the country. Some fourteen communities in the Northwest Territories and Yukon have been authorized by the CRTC to receive the CANCOM service. This service now provides signals from 4 Canadian television stations, 9 Canadian radio stations and 4 U.S. network television signals (CBS, NBC, ABC, PBS).

In addition to the CANCOM service, a number of other television services are available to underserved northern communities via the Canadian satellite system including the CBC network service, the House of Commons channel, and pay television services. In addition to the national pay television services, a regional general interest pay television service is available to the inhabitants of British Columbia and the Yukon. On July 17, 1983 following a public hearing, the CRTC approved an application b Allarcom to extend its general interest pay television service to two western provinces and the Northwest Territories.

All of these developments represent a remarkable improvement in the programming available to northern communities in just a few years and reflect, to a large extent, the main principle of the Northern Broadcasting Policy: to provide northern citizens with greater programming choice.

The Department of Communications continued to make available a handbook, *Community Distribution of Satellite Programming*, providing the information needed to establish undertakings for the redistribution of satellite programming. The guide is primarily aimed at providing community groups interested in obtaining a licence with the necessary information on this procedure and on the technical requirements for earth stations and broadcasting undertaking a radio or television distribution system in a remote community. In addition, the Department of Communications continued to operate in its regional and district offices a program of information on licensing procedures and technical requirements for satellite earth stations to groups in northern and rural communities interested in establishing or expanding their community distribution system.

The Department of Communications continues to examine ways by which television services can be extended to Canadians who live in smaller communities and isolated homes in northern and rural parts of the country. For that reason licensing requirements have been relaxed to allow the use of earth stations by individuals. The implementation of a true direct-to-home satellite broadcasting system, however, requires a long lead time. The Department of Communications took the first step in the planning process in the spring of 1983 with the publication of the report "Direct-to-home Satellite Broadcasting for Canada" which summarizes some of the legal, regulatory, technical and institutional options derived from many studies undertaken by the Department over the past two years. In addition, the Department announced in October 1983, that it was



The Department of Communication is reviewing direct-to-home satellite television in Canada and its potential for small northern communities and isolated homes.

prepared to received public comment on the issues surrounding the introduction of direct-to-home services for the many Canadians, such as those residents of the Yukon and Northwest Territories who cannot be served by more conventional delivery systems. More than twenty submissions were received commenting on both the long-term development of direct broadcasting satellite delivery systems and the feasibility of using existing satellite facilities for direct-to-home delivery of broadcasting programming. A review procedure of these submissions has been undertaken and will continue into the 1984-85 fiscal year.

The CRTC has issued several broadcasting licences to communities in the Yukon and the Northwest Territories, thereby increasing access to radio and television programming provided by the CBC and to the development of community radio and television stations. New television stations approved for ten communities in the Northwest Territories include : Wrigley, Rae Lakes, Whale Cove, Broughton Island, Lac La Martre, Repulse Bay, Sachs Harbour, Lake Harbour, Clyde River and Igloolik. Licence applications for new FM radio stations were approved in the Northwest Territories for the communities of Whale Cove, Rae Lakes, Paulatuk, Aklavik, Lac La Martre, Repulse Bay, Sachs Harbour and Lake Harbour. In the Yukon, similar licenses were approved for Dawson City and Pelly Crossing. In addition to these new services, the CRTC also renewed the radio licenses in four communities in the Yukon and thirty four in the Northwest Territories as well as three television licenses in the Yukon and nine in the Northwest Territories and one cable licence in Whitehorse.

In July of 1983, the CRTC published *Community Television Handbook: for Northern and Underserved Communities.* This booklet is designed to provide municipalities, citizens' groups, and potential users of CANCOM affiliates with the basic information required for the implementation of community programming. The publication addresses the social benefits to be derived from local programming and describes the procedures in an easily understood style.

During the past year, the Department of Communications has maintained close working contact with the CBC Northern Service. Both DOC and CBC support more native television training and production.

The Department of Communications continues to be responsible for all aspects of authorization, licensing, frequency assignment and spectrum management under the Radio Act. In the North, this service is provided by the District Offices in Yellowknife, Fort Smith and Whitehorse. The Fort Smith Office also operates a monitoring station.

Plans for 1984-85

The Department of Communications will continue to promote communication services throughout the North and to encourage the development of more northern and native programming on radio and television. The New National Broadcasting Policy and the Northern Broadcasting Policy represent important steps toward achieving this objective.

The Summer Youth Employment Program, shared with Employment and Immigration, will be continued again in 1984-85 in both the Northwest Territories and the Yukon.

The Department will continue its review of Direct-to-Home satellite television and its potential for improving television service for small northern communities and isolated houses. An updated version of *Community Distribution of Satellite Programming* which reflects new developments in satellite delivered television is expected to be available for community groups in underserved parts of rural and northern Canada.

It is anticipated that in the 1984-85 fiscal year, the CRTC will continue to authorize broadcasting undertakings in northern communities to distribute the satellite-delivered CANCOM television and radio service and Canadian pay television services.

Department of Justice Canada

Economic Function: General Government Services

Responsibilities

The Minister of Justice appoints judges to the Territorial Supreme Courts while the department, with offices in Whitehorse and Yellowknife, directs court proceedings on behalf of the Crown under the *Criminal Code*, other federal statutes and territorial ordinances. The department, through these two regional offices, also gives legal advice and assistance to the Territorial field offices of other federal departments. In addition, the department shares the costs of legal aid, the native courtworker program and compensation to victims of violent crimes in the Territories.

Review 1983-84

Payments totalling $639,494 were made to the Northwest Territories in 1983-84 plus retroactive payment of $3,481 for 1981-82 expenditures, including $415,000 for territorial legal aid expenditures incurred in 1982-83, $26,948 for compensation in 1982-83 to victims of violent crimes and $194,065 for native courtworker services including $7,810 for services in 1982-83 and $186,255 for services in 1983-84. Payments totalling $333,835 were made to the Yukon Territory, including $220,000 for legal aid expenditures in 1982-83, and a retroactive payment of $50,000 for legal aid expenditures in 1978-79, 1979-80 and 1980-81, $18,385 for compensation in 1982-83 to victims of violent crimes, and $45,450 for native courtworker services in 1983-84.

In 1982-83 the legal aid cost-sharing agreement with the Northwest Territories was extended for the expenditure year 1981-82, and the maximum federal contribution increased to account for increased costs. Similarly, federal cost-sharing to the Yukon was extended for a year and was increased in amount. The Yukon agreement was re-written at the same time to conform more closely to the cost-sharing arrangements for the Northwest Territories and the provinces.

Plans for 1984-85

During 1984-85, it is anticipated that the present review of the legal aid arrangements in the two territories will be completed with a view to reflecting changes that may be made as a result of the current legal aid negotiations with the provinces.

Eldor Resources Limited

Economic Function:[1]

Eldor Resources Limited, the wholly owned subsidiary of Eldorado Nuclear Limited, a federal Crown Corporation, participated in one field exploration program in the Mackenzie District of the Northwest Territories in 1983. An interest was maintained in one other project in the Mackenzie District and two in Yukon Territory although no work was carried out.

Eldor anticipates that this level of exploration will be maintained in 1984.

1) Eldor Resources is not reported in ANEP

Employment and Immigration Canada

Economic Function: Economic Development (Human)

Employment and Immigration Canada (EIC) provides employment services to the Northwest Territories through Canada Employment Centres (CECs) in Yellowknife, Hay River, Inuvik and Frobisher Bay. Full-time sub-offices are maintained at Fort Simpson, Fort Smith and Rankin Inlet. An Employment Development Branch office in Yellowknife also administers a variety of programs in the N.W.T.

A Whitehorse-based staff concentrates on maintaining and improving employment services to all areas of the Yukon. Outreach workers complement this work and provide employment services in several outlying areas.

Review 1983-84

In the N.W.T., a full range of unemployment insurance programs is available from CECs in both Frobisher Bay and Yellowknife. From April 1, 1983 to March 31, 1984, 4,801 claims were received from N.W.T. residents. Gross benefits paid out during the period amounted to $15,064,000.

From April 1, 1983 to March 31, 1984, 5,517 applications for Unemployment Insurance were received from residents of the Yukon. Gross benefits paid out during the period amounted to $18,751,000.

The Canada Immigration Centre (CIC) in Whitehorse operates on a year-round basis and provides the full range of immigration services, while the CIC in Beaver Creek operates from May to September primarily as a Port of Entry. During the 1983-84 fiscal year, 48 immigrant and 256 visitor applications were processed. A total of 1,912 persons were referred for Immigration Secondary Examination. As a result, 14 were refused entry. Inland, 166 persons were investigated. Fifty-five were found to be in violation of the Immigration Act.

Northwest Territories

The Yellowknife CEC with a budget of 48 person years (five of which provide itinerant services), and its branch offices, serve about 34 settlements and a population of more than 25,700. The Centre is responsible for providing services to about two-thirds of the N.W.T. Services are largely directed toward government offices in the capital city and the major mines in the area, including two large gold mines in Yellowknife.

The CEC in Hay River with a budget of six person years (two of which are dedicated to itinerant services) looks after a labour market area of about 78,000 km^2 with a population of approximately 5,411.

The Inuvik CEC with a budget of 12 person years (three of which are dedicated to itinerant services) is responsible for an area of about one-sixth of the N.W.T. The combined population of the 9 settlements it serves is approximately 6,265.

The Frobisher Bay CEC, budgeted with six person years is also responsible for another one-sixth of the N.W.T. and serves 14 settlements with a population of more than 8,300. This CEC also serves the Baffin Region.

From April 1, 1983 to March 31, 1984, the N.W.T. CECs recorded 4,800 new registrations and 6,000 registration revivals. In an effort to find employment for new registrants, the CECs referred 9,500 job seekers to vacancies. In all, more than 3,300 people were placed. The Employment Development Branch office was also active during 1983-84.

Four Job Creation programs, (Career-Access, Canada Works, Job Corps and Local Employment Assistance and Development (LEAD)) accounted for a major proportion of the work carried out by the CECs in the N.W.T.

The Career-Access Program provides employment opportunities for those who face serious difficulties in finding on-going employment because they lack work experience, are disabled or otherwise disadvantaged. It operates through a system of wage subsidies to employers. Under this Program $469,624 was spent during the fiscal year to create 66 jobs. The jobs created amount to a type of internship, allowing native and non-native people to gain valuable on-the-job training and experience.

The Canada Works Program spent $5.1 million to create 852 jobs. The Program, in collaboration with private industry, supports a wide range of projects that last from six to 52 weeks. The program is designed primarily to provide jobs in a time of economic slump or unexpected crisis, such as the closing of a major employer. Activities funded included construction of houses on and off reserves, building renovations and garage exteriors. Canada Works, under Section 38, was also involved in mine development and exploration.

Under the Job Corps Program, $1.9 million was spent during fiscal year 1982-83 to create 116 jobs. Funding is offered to businesses, volunteer agencies, charitable organizations, individuals and community groups to organize projects that will provide skills and motivation to the employment disadvantaged to assist them in joining the regular work force. The type of projects funded in the N.W.T. include training of natives in butchering, preparing native women for participation in the labour force through lifestyles training and counselling, training native women in the art of developing small businesses, training native people in a local print shop in a variety of art media.

The Local Employment Assistance Program (LEAP), a predecessor of the new Local Employment Assistance and Development (LEAD) program, provided $300,000 for the creation of 15 jobs. LEAP assisted communities hit with slow economic growth and chronic high unemployment, by creating local development corporations and investing in projects meeting the communities' own economic development priorities and needs.

Under the National Institutional Training Program, the Commission purchased 83,000 training days from the Department of Education of the Government of the N.W.T. and started a total of 1,117 trainees in the program. Skill training was provided to 513 trainees. In addition, 167 apprentices received classroom training during the year and 309

people received academic upgrading. The Commission provided $3.5 million to purchase training courses specifically for Native people to enable them to take better advantage of available employment opportunities. Total expenditure was about $6.3 million. This included $1.8 million for income support.

The Norman Wells Oilfield Expansion and Pipeline Project was the focus of special training initiatives. About $2.1 million, including $1.6 million for course purchases and $0.5 million for training allowances and trainee travel was spent.

Under the Industrial Training Program, which provides financial assistance for employee training, 222 Natives received training.

The Canada Manpower Mobility Program provides financial assistance to workers who must move from one community or region to another to take a job or get vocational training. Assistance is also provided for those who must travel to look for work or obtain employment services offered by CECs. During fiscal year 1983-84, $41,404 was spent to relocate 34 residents of the N.W.T., to provide exploratory travel for 12 people and to assist 2 people to travel to temporary employment.

Summer Canada funded 131 projects in the N.W.T. during the year, which provided summer work for 507 students at a cost of $1.1 million. Canada Employment Centres for Students operated in the community of Yellowknife from May to August.

Plans for 1984-85

The Commission will commence delivery of two new programs - Options North and Business Management Development - which were authorized under the Canada/N.W.T. Human Resource Development Subsidiary Agreement signed in 1983-84. Altogether, some $5.57 million will be invested by the Commission under this Agreement over the next three years.

Yukon Territory

Review 1983-84

The Commission continued to emphasize the need to develop the human resource potential of the Yukon and the importance of training Yukon workers and upgrading their skills.

The CEC in Whitehorse with a budget of 42.5 person years, serves the entire Yukon population of 23,216. Particular attention was paid to the Commission's four Job Creation programs.

From April 1, 1983 to March 31, 1984 the Yukon CEC recorded 3,200 new registrations and 1,300 registration revivals. In an effort to find employment for new registrants, the CEC referred 7,500 job seekers to vacancies. In all, more than 2,700 people were placed.

Under the Career-Access Program $642,813 was spent during the fiscal year to create 119 jobs for both native and non-native northerners.

The Canada Works Program spent $5.2 million to create 1,065 jobs for residents of the Yukon. Activities included construction of houses on and off reserves, building renovations and garage exteriors. Canada Works, under Section 38, was also involved in mine development and exploration.

Under the Job Corps Program, $166,000 was spent during fiscal year 1983-84 to create 8 jobs.

The Local Employment Assistance and Development Program (LEAD) provided $140,423 for the creation of 11 jobs during the year. LEAD set up projects in the Yukon to continue activities begun under LEAP such as the Yukon Native Production Centre which produced parkas and winter garments. It is expected that under LEAD similar successful projects will be funded. LEAP provided $326,061 to create 33 jobs.

Training was a major priority. Under the National Institutional Training Program, the Commission purchased 38,400 training days from the Department of Education of the Government of the Yukon and started a total of 350 trainees in the program. Skill training was provided to 193 trainees and 115 people received academic upgrading. The Commission provided $450,000 to purchase training courses specifically for Native people to enable them to take better advantage of available employment opportunities. Total expenditure was some $2.6 million, including income support of $0.9 million.

The Canada Manpower Mobility Program provided $67,990 to relocate 41 residents of the Yukon, to provide exploratory travel for 35 people and to assist 2 people to travel to temporary employment.

Summer Canada funded 117 projects. These provided summer work for 341 students at a total cost of $711,000. The Canada Employment Centre for Students operated from April to August. The Centre also provided advice on the preparation of résumés and techniques for successful job hunting.

Indian and Inuit Employment Assistance

The Commission operates certain programs specifically for Native Canadians. The Native Internship Program, which creates summer employment for Native students in various offices of the Commission is one example. Two Native Employment Counsellors work in the Whitehorse CEC in the Yukon. A client services consultant in N.W.T. is responsible for the Affirmative Action Program.

Native Canadians are also served by Outreach, through which non-profit, private sponsors extend employment services to recognized target groups. Approximately 21% of Outreach funds for 1983-84 were devoted to Native sponsored Outreach projects in the two territories.

EIC's Affirmative Action Program provides a number of indirect benefits to Native Canadians. Through Affirmative Action, private sector companies enter into voluntary agreements with EIC to develop non-discriminatory hiring and promotion practices. Thirty-seven affirmative action agreements now exist, with Native Canadians as a target group, in Canada. While no full affirmative action agreements exist in either B.C. or Alberta which have direct impact on the North, negotiations with the major oil companies to implement Special Affirmative Measures are in progress.

CEIC has been working in concert with COGLA (Canadian Oil and Gas Land Administration) to ensure that Canadians receive maximum employment benefits from the exploration and development of petroleum resources on Canada lands. Specifically, CEIC is joining with COGLA in the negotiation of Canada Benefits plans which include special affirmative measures to provide employment and training opportunities for members of disadvantaged groups during the projects. Native people, in particular, are benefiting from this approach.

Companies are now in the process of submitting their 1983 annual reports to COGLA and figures are not yet available. The following data summarizes activities for 1982:

Mackenzie/Beaufort

Employment:
Over 1,400 job opportunities were created by the combined programs of DOME, Gulf and Esso.

Approximately 1,330 or 95% of those positions were filled by Canadians and over 300 positions or 21% were filled by Northerners, of whom 240 were Native people.

Training:
Special Northern Training Programs were initiated in conjunction with federal and territorial agencies. An almost all-Canadian workforce is projected in the next 3 to 4 years.

Mainland Territory

Employment:
Approximately 900 jobs were created by various programs in place during 1982, over half associated with the Norman Wells project - almost all jobs were held by Canadians, of which 100 to 150 were Native Northerners.

Training:
Special Northern Training Programs are currently being developed at Norman Wells for Northerners, more particularly, for those of Native origin.

Arctic Islands/Eastern Arctic Offshore

Employment:
Drilling programs have generated 550 employment opportunities at peak in both regions. Of these, 84% or 460 were filled by Canadians. Approximately 60 jobs were filled by Native people.

Training:
A five-year apprenticeship program and institutional training program for Native employees was initiated in the Arctic Islands. Some on-the-job training was also provided for Native Northerners in the East-Arctic.

Seamanship and drill floor training was provided to Canadians in a plan designed to replace foreign workers. Employment opportunities in the East Arctic were limited by the seasonal nature of operations and by the chartering of a foreign drill vessel and supply boats prior to the negotiation of a Canadian Benefits Agreement with COGLA.

Hudson's Bay

Employment:
Some 34 positions were created by seismic programs, of which 10 were filled by Canadians.

Two Native people from the region were employed as wildlife observers.

Energy, Mines and Resources Canada

Mineral Policy Sector

Economic Function: Economic Development (Other)

Responsibilities

The Mineral Policy Sector assists in the development of federal policies on mineral resources. It deals mainly with non-energy mineral resources and the contribution which these make to the economy.

Review 1983-84

Mineral Policy Sector northern activities involved special study groups comprising representatives of federal and territorial governments and industry, interdepartmental committees and conferences.

Reserves and production capability of Canada's nonferrous metal mines and exploration activities were monitored. Two documents on the results are publicly available: MR 191 Canadian Reserves as of January 1, 1981: Copper, Nickel, Lead, Zinc, Molybdenum, Silver and Gold; and, MR 197 Canadian Mines: Perspective from 1982: Reserves, Production Capability, Exploration, Development. Report on 1983 Reserves and on the Perspective from 1983 will be available in early 1984.

The Mineral Policy Sector chairs the Federal-Provincial Mineral Statistical Committee, which includes territorial government participation. It compiles and publishes annual mineral statistics, including those on northern mines. A statistical report entitled Production of Canada's Leading Minerals was also published.

With the Department of Indian Affairs and Northern Development, the Mineral Policy Sector has been involved in the evaluation of problems in the northern mineral industry created by the depressed metal markets and prices in 1982.

Officers of the Economic and Financial Policy Analysis Branch participated in the study of the northern tax and royalty regimes.

Plans for 1984-85

The Sector will continue to gather data bearing upon northern mineral development. A commodity study on bentonite and possibly one on barite will be done. Advisory assistance will be given on issues, such as northern mineral policy, comprehensive native claims, and withdrawal of northern lands for parks. Along with Indian Affairs and Northern Development, the Mineral Policy Sector will continue to provide technical advice to the Canada Employment and Immigration Commission about job creation proposals and will inform the industry about the programs that are available. Policies being developed by the territorial governments and Indian Affairs and Northern Development affecting the non-energy minerals industry will be monitored.

Canada Centre for Remote Sensing

Economic Function: Economic Development (Other)

Responsibilities

The Canada Centre for Remote Sensing (CCRS) develops and co-ordinates a national program to produce remotely sensed data and to derive information for the management of Canadian natural resources. In recent years this activity has included a concentrated effort in support of northern resources exploration and extraction.

Review of Activities 1983-84

CCRS continued to develop remote sensing information systems to support petroleum exploration and delivery from Arctic waters. Present activity includes research on the use of aircraft-based microwave sensors needed to support exploration activities in the Beaufort Sea and on the Labrador Shelf. This same facility is also being used to determine mission profile requirements for a planned Canadian microwave satellite, RADARSAT, intended as the primary information source to support oil and liquified natural gas extraction and transportation from offshore Labrador and the Arctic. The Canadian RADARSAT program will provide, starting in 1990, complete coverage of the proposed Arctic transportation routes on a regular basis. The microwave sensors on this satellite will ensure all-weather all-year coverage of the Arctic regions because these sensors do not require sunlight for operation and can penetrate cloud.

A CCRS Convair-580 aircraft, equipped with a synthetic aperture radar (SAR) and a microwave scatterometer, was flown off the Labrador coast in the spring of 1983 and again in the early spring of 1984 as part of an experiment to determine the microwave signatures of icebergs. These activities are directed at determining the technical specifications of the sensors to be carried on the proposed satellite and on surveillance aircraft.

In a co-operative project with the Environmental Research Institute of Michigan, the Convair 580 was flown to Spitzbergen where data on sea ice signatures in the marginal ice zone were collected.

The Department of National Defence continued to collect infrared terrain signatures under a wide variety of Arctic conditions using the digital multispectral scanner mounted in the CCRS Falcon aircraft.

Plans 1984-85

In the early summer of 1984, the Convair 580 will again visit Spitzbergen to collect data sets on the marginal ice zone, as part of a major project to measure sea ice signatures.

CCRS aircraft will also collect airborne radar imagery of icebergs off the coast of Labrador in the fall of 1984.

Canada Centre for Mineral and Energy Technology

Economic Function: Short Range Research

Responsibilities

CANMET undertakes extensive research in the fields of mining, mineral processing, materials and energy technology. Certain aspects of projects relating to materials used for oil and gas pipelines, arctic vessels and offshore structures have a direct bearing on federal activities in the north.

Review 1983-84

Research on steels for northern linepipe has concentrated on the increases in strength possible in current steels using on-line accelerated cooling during processing. Higher strength pipelines offer the potential of higher operating pressures with concomitant efficiency improvements. Research has recently begun on weld metal properties of large diameter pipeline fittings produced by the quench and temper route in order to produce matching fittings of similar strength to current linepipe. The magnetic properties of pipeline steels under stress have been studied with an objective of detecting macroscopic stress changes with time. Such stress changes might be anticipated at locations of generalized corrosion and earth movement, such as frost-heaves and washouts. A theory of magnetization effects through repeated stress cycles has been developed. Work is nearing completion on the degradation of linepipe steels carrying sour oil and gas. The results demonstrate the importance of the steel characteristics used to manufacture linepipe.

A series of propeller failures on icebreakers of the Canadian Cost Guard Service has led to the discovery that the impact properties of manganese-nickel-aluminum bronzes can be low in very thick sections of sand castings. A study is in hand to assess the effect of manganese and aluminum contents on impact toughness and determine whether an industrially useable heat treatment can be developed to improve resistance to fracture.

The research program on materials for offshore structures in Arctic environments has expanded in scope and activity. A cost-shared research program with industry on steels and concrete for offshore platforms is now in its second year of operation. In this program Canadian steeel companies have produced special grades of tough weldable steel for ship and rig applications down to -45°C. CANMET sponsored a two-day study session on fracture toughness of steels for Arctic use at which draft standards for material selection for Arctic class ships were discussed. The in-house research on corrosion fatigue of welded joints for offshore platforms is being complemented by industry and university studies, and by collaboration with related U.S. and EEC programs. Low temperature fracture toughness studies have been accelerated by the commissioning of a cold chamber (-1200°C) universal test machine for plate, weld, and heat affected zone toughness measurements.

Nantar Engineering Limited, Kingston, completed a contract on "The Behaviour of Frozen Backfill in Underground Mines" designed to determine significant physical and mechanical properties of frozen tailings when used as backfill materials in underground mines operating in permafrost regions.

Plans for 1984-85

Research on northern linepipe and pipelines will include more work on on-line accelerated cooling with the installation of a custom facility on the rolling mill. Studies of ultrasonic pattern recognition and sizing to improve pipeline inspection capability and further development of stress detection by magnetic measurement will be done. A survey of acoustic holography as a defect detection technique will be undertaken. A lower heat input welding technique for mill welds designed to offer improved weld heat affected zone toughness for thick pipe will be examined.

The study on the cause and remedies for low toughness in bronze icebreaker propellers should be completed in 1984-85.

In the program on materials for offshore structures, reports are expected on the evaluation of consumables for shielded metal arc welding of offshore materials; on the effect of thickness on fatigue crack growth in T-joint specimens in air; on an improved ultrasonic technique for crack depth monitoring, and on the properties and weldability of 350 WT grade ship steels.

Research on the behaviour of frozen backfill in underground mines will be expanded. New work will include the long term testing of the physical and mechanical properties of material used as backfill in underground mines operating in permafrost regions.

Geological Survey of Canada

Economic Function: Research (Long Range)

Responsibilities

The Geological Survey of Canada:

- ensures the availability of comprehensive basic knowledge of the geology of the Canadian landmass, including offshore areas.
- acquires geological information on the nature, distribution and magnitude of our mineral and energy resources, and development of related exploration technology, as required for effective exploration of minerals and energy, estimation of the resource base of Canada, and formulation of policies.
- identifies and assesses natural geological hazards, features, and processes that affect the environmental and ecological balance and that may constrain our use of the land, particularly in association with resource exploration, development and utilization.

Review 1983-84

Preliminary results of the 1983 field season (17 projects) were released in Current Research, Part A (January 1984).

Geological mapping at 1:250 000 scale was completed for 3 map sheets on southern Ellesmere and North Kent Islands (NTS 59A, 49B, 49A) and maps completed as rough drafts. A large strike-slip zone was discovered in the Starnes Fiord area.

Mapping of several regions of structural complexity on Cornwallis Island and nearby smaller islands was refined. Parts of 5 NTS sheets will be compiled as a single sheet centering on Cornwallis Island.

A good understanding of Mesozoic stratigraphy and sedimentology on western Axel Heiberg was obtained through detailed mapping. Salt diapirism occurred throughout the Mesozoic in the area.

Field work on Creataceous volcanic rocks of the Sverdrup Basin was undertaken and the stratigraphy of the rocks revised.

Field studies on northern Victoria Island reveal a significant unconformity between Lower and Middle Devonian strata in the lateral equivalents of the Blue Fiord Formation.

Preliminary age determinations were obtained in a regional surface-surface study of Carboniferous palynomorphs and condodonts from Ellesmere and Melville Island.

A preliminary report on mineral resource potential of the proposed Bylot Island-Borden Peninsula (Baffin Island) park area was completed and an assessment of oil and gas potential of the region was completed for incorporation into the final Bylot Island-Borden Peninsula report.

Studies of hydrocarbon source rock relationships have been completed for the Sverdrup Basin. The study showed that over-mature gas in the western Sverdrup Basin was vertically migrated from sites of salt-diapirism and igneous intrusion.

Petroleum geochemistry studies of offshore Mackenzie Delta wells have shown that in contrast to the Richards Island are hydrocarbons have migrated to the current reservoir position from considerable depth.

A successful assessment of the resource potential of the Beaufort Sea was completed and reports on the Heiberg and Awingak assessment in the Sverdrup Basin are in the final stages of preparation.

Drill hole temperature and seismic velocity measurements indicate the development of seasonal frost above the permafrot zone in shallow water areas of the Beaufort Sea. This has obvious significance for pipe line routing.

Preliminary results from landform investigations on Victoria Island show that primary (glacial) fabric is preserved on well drained sites less than one metre from the surface. This has important implications in the study and understanding of glacial landforms and the assumed intensity or pervasiveness of periglacial processes.

Geological mapping at 1:50 000 scale was completed for 3 sheets in the 105-0 (Niddery Lake) map-area. An extensive decollement zone involving 1.5 km of stratigraphy and shortening to 20% of the original extent of these strata, was mapped across the entire northwestern part of the 105-0 map area (width over 80 km).

Field work in the northern Yukon resulted in a more detailed understanding of facies distribution within the gas-bearing Lower Cretaceous Parsons Group.

Major progress was made toward completion of a comprehensive ostracode zonation through Middle Ordovician to Middle Devonian rocks of the Mackenzie Mountains.

A detailed petrographic study of tourmaline-rich nodules in the Seagull batholith, Yukon Territory, suggests that they represent barium and floride-rich concentrations that accumulated prior to final crystallization of a highly differentiated granitic magma. Similar occurrences of such nodules are found in granitic rocks associated with tin deposits around the world.

A phase II (follow-up) report on the interpretation of geochemical and mineral occurrence data in the Mount Sedgwick area of the proposed Northern Yukon National Park was completed and is currently being prepared for Open File release.

Detailed lichonometric studies in the Frances Lake area (105 H) in the Yukon resulted in the delination of two ages of rock glacier activity older than White River ash (1200 BP) and several younger periods of rock glacier activity and of moraninic construction. These studies will eventually provide a much better understanding of the environmental record of southeastern Yukon.

Mapping and soil studies in the McQuesten area of the central Yukon confirmed that the degree of development of soils can be used as a criteria in identifying areas underlain by glacial deposits of different ages. In addition the degree of soil development can be used to correlate glacial deposits of the same age but associated with different glacial centres. The data obtained has made it possible to better define the age and history of Quaternary events in the area.

The major Quaternary sections on the Mainland south of the Beaufort Sea between the Yukon-Alaska border and the Baillie Islands were remeasured and materials were collected for paleoecological and paleomagnetic analyses and for dating. The information gained will be used to establish the basic Quaternary stratigraphic framework of the area where extensive parts were never glaciated. Also the results should provide a basis for correlating the Quaternary suites of sediments with those on adjacent Banks Island, the Yukon and Alaska.

Field components of two major projects and four associated thesis were completed in the northern Wopmay Orogen between Great Bear and Great Slave Lakes. The previously defined plate tectonic model for the area was refined through structural studies that identified a tectonic "shingle" and the direction of movement on several faults, the recognition of low grade metamorphism of the sedimentary rocks and the comparison of the Rocknest carbonate formation with younger reef complexes.

Mapping in the northern part of the Tectonic Zone that marks the boundary between the Slave and Churchill Province boundary east of Bathurst Inlet revealed that extensive gneisses outlined by previous reconnaissance mapping were derived from Archean volcanic and sedimentary rocks.

Field studies of the Booth River complex, N.W.T. suggests the existence of pre-Goulbourn, post-orogenic mafic igneous activity. The previously undescribed southern rim of the Complex was examined, and rocks similar to those of the Complex and containing massive ilmenite was discovered 75 km to the west.

In the central Keewatin District, Aberdeen Lake map area and parts of Beverly Lake area were completed. Lower Proterozoic sedimentary sequences were defined and depositional environments and facies variations determined that suggest the sequence was an ancient passive margin sequence.

In the same region mapping of the Deep Rose Lake area was completed. Basement of Lower Proterozoic sedimentary sequences was mapped and both Archean? and Proterozoic granitoid gneisses and plutonic rocks defined.

Field studies (1983) in the McLeod Bay and Artillery Lake areas, NWT indicate that occurrences of Copper-uranium-lead mineralization are more numerous than previously documented. This has a bearing on the current resource assessment of the proposed East Arm-Artillery Lake national park.

Field work was conducted on the iron-formation on the Melville Peninsula to review results of company exploration (Borealis Explorations Ltd) and to investigate gold distribution in the iron-formation.

The depositional environment of the Deep Rose Lake (Keewatin) esker system was investigated in an attempt to find the source of trains of uranium-bearing boulders found on terraces and rogen moraine near the system. The esker proper was found to be flanked by later outwash terraces deposited over glacier ice which melted, causing most of the original terrace surfaces to collapse. A model for esker and outwash deposition resulted from this and earlier (1968) unpublished studies.

Co-operation between the Geological Survey of Canada and l'Université de Montréal has made possible the detailed study of a type section in a postglacial debris flow exposed in the lower Coppermine River valley, Northwest Territories. The results are expected to lead to a better understanding of the modes of emplacement of olisthostromes in modern and in older sedimentary environments. The study may also help define the nature of glacier related debris flows often referred to as "flow tills".

Publications of the Geological Survey of Canada released between 1 April and 30 March 1984 concerned with the Yukon Territory and Northwest Territories:

Memoirs

Memoir 390
Geology of Amund Ringnes, Cornwall, and Haig-Thomas Islands District of Franklin; H.R. Balkwill, 1983 (Map/1471A).

Memoir 401
Pre-Mesozoic geology in the subsurface of Peel River map area, Yukon Territory and District of Mackenzie: D.C. Pugh, 1983.

Memoir 404
Quaternary geology of Somerset Island, District of Franklin; Arthur S. Dyke, 1983. (Map/1555A).

Memoire 405
La géologie du Quaternaire et la géomorphologie de l'île Banks, Arctique canadien: Jean-Serge Vincent, 1983. (Carte/1565A).

Bulletins

Bulletin 324
Structure and metamorphism of the Aphebian Penrhyn Group and its Archean basement complex in the Lyon Inlet area, Melville Peninsula, District of Franklin; J.R. Henderson, 1983. (Map 1510A).

Bulletin 346
Precambrain geology of the Prince Albert Hills, western Melville Peninsula, Northwest Territories; Thomas Frisch, 1982. 70 p.

Bulletin 359
The dinoflagellate Oppel-zonation of the Jurrassic-Lower Cretaceous sequence in the Sverdrup Basin, Arctic Canada; E.H. Davies, 1983.

Papers

Paper 82-9
Geology of Hyde Lake map area, District of Keewatin, Northwest Territories: J.A. Fraser; Map/1-1982.

Paper 82-10
Reconnaissance geology of the Precambrian Shield of Ellesmere, Devon and Coburg Islands, Arctic Archipelago: a preliminary account; Thomas Frisch.

Paper 83-9
A Pleistocene diatom assemblage from Ellesmere Island, Northwest Territories; Sigrid Lichti-Federovich. 59 p.

Paper 83-31
Oil and natural gas resources of Canada, 1983; R.M. Procter, G.C. Taylor, J.A. Wade.

Paper 84-8
Current Activities Forum 1984: Program with abstracts. Forum des travaux en cours 1984: Programme et résumés.

Paper 83-1B
"Current Research" contained 47 reports and 8 notes of which 23 were concerned with the North.

Paper 84-1A
"Current Research" contained 82 reports and 10 notes of which 18 were concerned with the North.

Open Files

Open file 845
Stream sediment and water geochemistry of the Howard's Pass (XY) Zn-Pb deposit and Nor Zn-Pb-Ba occurrence, Selwyn Basin, Yukon and Northwest Territories; W.D. Goodfellow.

Open file 883
A preliminary geological map of Baker Lake, District of Keewatin, Mikkel Schau.

Open file 932
Review of laboratory testing of permafrost; Komex Consultants Ltd., and GEOTECH Resources Ltd.

Open file 942
Geology of the Amer Lake (NTS 66H) map area, District of Keewatin, Northwest Territories; S. Tella, W.W. Heywood.

Open file 954
Development of a proposed model to account for the surficial geology of the southern Beaufort Sea; M.J. O'Connor and Associates Ltd.

Open file 960
Sedimentology of Arctic Fjords experiment: HU 82-031 Data Report, Volume 1; J.P.M. Syvitski, C.P. Blakeney.

Maps

Map 1532A
Geotectonic correlation chart - Operation Porcupine project area, Yukon Territory and District of Mackenzie; D.K. Norris, 1983.

Map 1546A
Geology/Géologie Echo Bay - MacAlpine Channel area, District of Mackenzie; R.S. Hildebrand; 1:50 000, 1982.

Map 2-1982
Surficial geology/Dépôts meubles - Big Kalzas Lake, Yukon Territory; O.L. Hughes; 1:100 000; 1983.

Map 3-1982
Surficial geology/Dépôts meubles - Grey Hunter Peak, Yukon Territory; O.L. Huges; 1:100 000; 1983.

Map 4-1982
Surficial geology/Dépôts meubles - Janet Lake, Yukon Territory; O.L. Hughes; 1:100 000; 1983.

Map 5-1982
Surficial geology/Dépôts meubles - Mount Edwards; Yukon Territory; O.L. Hughes; 1:100 000; 1983.

Map 14-1982
Surficial geology/Dépôts meubles - Wolf Lake, Yukon Territory; R.W. Klassen; 1:250 000; 1982.

Earth Physics Branch

Seismological Service

Economic Function: General Government Services

Responsibilities
The Seismological Service determines the parameters of all significant earthquakers in northern Canada and offshore areas, and provides assessments of earthquake risk. Research is conducted on the structure and properties of the Arctic lithosphere by studying the velocities and dispersion of seismic waves from Arctic earthquakes. Studies of the source mechanisms of earthquakes in active seismic zones provide data for investigations of seismotectonic processes and for calculations required for the earthquake-resistant design of man-made structures. A network of seismograph stations is maintained in northern Canada, and field experiments are conducted on deep seismic sounding of the crust and lithosphere.

Review 1983-84
Standard seismological observatories were operated at Alert, Mould Bay, Frobisher, Inuvik and Yellowknife. Seismic data acquired at these observatories for earthquakes world-wide, were relayed via Ottawa through a computer link to the National Earthquake Information Service in the United States. Regional observatories operated at Igloolik (with co-operation from the staff of the Igloolik Research Laboratory), Sachs Harbour, Shingle Point, Tuktoyaktuk, Nicholson Point and Komakuk Beach (initially in a joint venture with Dome Petroleum and later with OERD funding to monitor the seismicity of the Beaufort Sea), Haines Junction, Resolute, Whitehorse and Baker Lake. The Yellowknife seismological array continued operation, and the data transfer facility continued to send digital information on detected seismic events to a computer in Ottawa. The Yellowknife detection bulletin was transferred by a further computer link to research groups in the U.S. and U.K. In a co-operative project, the U.S. Department of Energy continued to operate a borehole seismograph near the Yellowknife array as part of the North American Regional Seismic Test Network for the detection and location of underground nuclear explosions. Data were transmitted to the U.S. by satellite link; selected data were acquired by EPB on request for studies of northern Canadian earthquakes.

Routine analysis continued of all earthquakes detected in and near the Canadian North. Rapid determinations were made of earthquakes of special concern or scientific interest; quarterly lists of all earthquakes were prepared about six months after their occurrence; and final findings were published in Canadian and International catalogues.

Analysis of the Beaufort Sea seismicity continued, with emphasis on utilizing data from the additional monitoring stations (supported initially by Dome Petroleum and later by OERD) to assess the accuracy with which previous Beaufort Sea earthquakes have been located.

As part of the CESAR project (Canadian Expedition to Study the Alpha Ridge), the EPB collaborated with the Geological Survey (Ottawa) and the Atlantic Geoscience Centre in a crustal seismic refraction survey of the Earth underlying this part of the Arctic Ocean. The refraction program was very successful, with over 200 seismograms collected on 500 km of reversed profiles along and across the northern portion of the Alpha Ridge. Preliminary results were presented at the December '83 meeting of the American Geophysical Union in San Francisco and will be updated for the May '84 meeting of the Canadian Geophysical Union in Halifax.

Plans 1984-85
The seismological observatories in the North and the Yellowknife seismological array will be maintained. These facilities will continue to contribute important data to Canadian and international research projects.

The analysis and publication of northern earthquakes will continue on a current basis. Large potentially-damaging earthquarters will be identified and reported as soon as possible. Detailed scientific studies of the larger northern earthquakes will continue as data and records become available. Special studies of seismicity and earthquake hazards will continue in regions of current and potential petroleum exploration in the northern offshore.

A seismic reflection experiment is planned for July 1984 on Devon Island. It will investigate the "Haughton Dome" structure known to be of meteorite impact origin. The experiment will involve cooperation between scientists from EPB, the University of Saskatoon, and Germany, and should yield valuable information about the structures formed at depth by the impact process.

A drifting ice island which separated from the Ward Hunt ice shelf in late 1982 is presently stationary offshore from Phillips Inlet on Ellesmere island. The island's position on the surface of the Arctic Ocean has been monitored with a weather buoy and satellite link since August 1983. A proposal for an ice-island scientific program is currently being prepared in order to obtain seismic information about the Arctic continental margin which will be needed in support of Canadian sovereignty and to help assess opportunities for mineral and energy resource development.

Geothermal Service

Responsibilities

The Geothermal Service collects, analyses and disseminates information on the thermal regime of the Canadian landmass and offshore areas as related to geotectonics, permafrost, gas hydrates, geothermal energy potential and the thermal properties of materials. The data base generated comprises field measurements of subsurface temperatures, depths to the base of permafrost and the distribution of gas hydrates determined from well-logs, and includes laboratory measurements of the thermal and heat-generation properties of earth materials.

Review 1983-84

With support from the Federal Energy Research and Development Program, analyses were commenced through contracts to examine all existing well-logs collected in the course of exploratory hydrocarbon drilling for evidence of frozen material. In the initial contracts the mature data base of geothermal observations from 140 wells was used to develop interpretation procedures. The study of 161 sets of well-logs from the Mackenzie Delta has revealed permafrost thicknesses ranging from O in the western Mackenzie Canyon area to as much as 740 m in the northern onshore Mackenzie Delta. Between longitudes 129°W and 136°W the majority of the onshore and most of the Beaufort Sea Shelf are underlain by permafrost with thickness in excess of 600 m. Gas hydrates occur in about 20% of the wells and persist to depths greater than 1200 m. In contrast to conditions in the Mackenzie Delta, permafrost exceeds 800 m in thickness in parts of the Arctic Islands and gas hydrates persist to depths of 2000 m. The gas hydrates are also much more pervasive, occuring in over half the 154 wells examined. Too few wells have been drilled in the north to determine more than regional variations in permafrost thickness; no information on the local topography of the permafrost base is revealed.

Using local wells to provide interpretative control, a new treatment electromagnetic sounding system has been successfully tested at two locations in the Mackenzie Delta and on the Sabine Peninsula on Melville Island in the High Arctic. The results are currently being evaluated prior to further field investigations.

To complete the necessary data collection for the study and analysis of geothermal conditions in the north, the depth-limited precise subsurface temperatures measured in preserved exploratory wells were augmented by less precise bottom-hole and formation temperatures collected by industry to depths of 4 km. Again the results illustrate the dramatic contrasts between the Mackenzie Delta-Beaufort Sea area and the Arctic Islands. Temperature gradients in the Mackenzie Delta vary between only 20 and 40° C/km whereas Arctic Island gradients vary from under 10 to over 50° C/km.

Studies and monitoring of a number of widely separated sites in the north have continued either internally or through contracts at Illisarvik, Alert, Mayo and Schefferville. With the commencement of the Norman Wells-Zama Lake oil pipeline an additional 12 sites are being established jointly with DIAND and Interprovincial Pipeline Limited along the proposed right-of-way. These sites span a distance of 800 km from discontinuous permafrost at Norman Wells to the southern limits of ground ice occurrence. They will thus present ideal long-term monitoring sites at which to study the interaction of climate and permafrost as well as the impact of the right-of-way and the pipeline. Controlled experiments on the freezing and thawing of soils around pipelines have continued jointly with Foothills Pipeline Limited at the Calgary Test Loop and with Carleton University and CNRS at the Caen facility in northern France.

The Service participated in the multidisciplinary CESAR 83 project in the spring of 1983 during which 12 determinations of the temperature gradient in the ocean-bottom sediments were made along with 800 measurements of thermal properties of the sediments. The moderate to low terrestrial heat flow measured has confirmed the non-thermal origin of the current topographic high of the Alpha Ridge beneath the Arctic Ocean.

Plans 1984-85

The Geothermics programme will, as personnel resources permit, continue its efforts to keep pace with the rapidly increasing demands associated with northern development, and to carry out important research on future energy resources and on fundamental studies of processes in permafrost terrains and of Arctic tectonics. Further efforts will be made to fill gaps in the thermal information base, particularly in the offshore where a new system for offshore-well instrumentation is being developed and tested with EBA Engineering Associates, Dobracky-Seatech and Panarctic Oils.

Several additional contracts are continuing to collect information on permafrost and gas hydrates from an interpretation of downhole well-logs, surface geophysical surveys and other data from industrial sources. Over the next several years these activities will complete several regional syntheses of the distribution of permafrost and gas hydrates and of the geothermal regime in relation to Arctic tectonics.

During the forthcoming year the extensive organization and planning of monitoring sites along the Norman Wells-to-Zama Lake pipeline should come to fruition as monthly monitoring of ground temperatures at six of the sites commences and as the surface impact of the first winter's construction is monitored.

Geomagnetic Service

Responsibilities

The Geomagnetic Service provides information on the direction and intensity of the earth's magnetic field over Canada and adjacent ocean regions. It publishes magnetic charts of Canada and provides information for many other maps, including aeronautical and marine charts, concerning the angle between true north and magnetic north ("magnetic declination") and its change from year to year. The Service provides information on the structure of the earth's crust and reference fields for the interpretation of the more detailed commercial surveys carried out in exploration for minerals, oil and gas. The magnetizations acquired by rocks at the time of their formation and during their subsequent history are analysed to learn when and how geological structures were formed. A network of magentic observatories is maintained in northern Canada, and field experiments are conducted on deep electromagnetic sounding of the crust and lithosphere.

Review 1983-84

Magnetic observatories operated continuously through 1983-84 at Alert, Mould Bay, Resolute, Cambridge Bay, Baker Lake and Yellowknife. Recording of magnetic variations in digital form continued at Igloolik, where the equipment is operated by personnel of the Department of Indian Affairs and Northern Development. Analysis of magnetic observations recently acquired at three sites originally occupied during the First International Polar Year (1882-83) has provided a better understanding of magnetic field changes in the Arctic over the past 100 years. Magnetic declination has increaed easterly by over 20° at Clearwater Fiord and Fort Conger and decreased by 9° at Fort Rae. A decrease in total field intensity was found at all three locations, but this reduction is substantially less than that observed at lower latitudes in North America. Magnetic repeat stations were re-occupied at Fort Chimo and Frobisher Bay.

Paleomagnetic sampling in the Arctic Islands continued with the collection of Permian and Cretaceous specimens from Axel Heiberg Island. The Permian rocks reveal a 35° counter-clockwise rotation in the NE Sverdrup Basin and the Cretaceous samples provide information about the Cretaceous Quiet Zone of normal polarity. Preliminary interpretation of magnetotelluric data from Project CESAR indicates the presence of a highly conducting layer at a depth of about 90 km beneath the Alpha Ridge which may be associated with partial melt in the asthenosphere.

Plans 1984-85

The six magnetic observatories will operate throughout 1984-85. In the continuing program of secular change studies, magnetic repeat stations will be re-occupied at Ennadai Lake, Coral Harbour, Tyrell Lake, Whitehorse and Dawson. Eight additional stations will be occupied in the central Arctic Islands in a special survey to relocate the exact position of the North Magnetic Pole. Palemagnetic analysis of rock units sampled in the Queen Elizabeth Islands will continue as will interpretation of the magnetotelluric data collected at CESAR. Planning will proceed for deep-sounding magnetotelluric experiments to be included in the program of geophysical observations from the drifting ice island currently located off the northern coast of Ellesmere Island.

Gravity Service

Responsibilities

The Gravity Service has the responsibility for completing the regional gravity survey of the Canadian landmass and offshore regions. In the far North, this work is performed in co-operation with the Polar Continental Shelf Project of EMR. Precise measurements of gravity provide basic data for the mineral and exploration industries, for studies of sedimentary basins and for studies of the earth's crust and upper mantle. In addition, these observations provide data for geodetic studies and meet a need of the Department of National Defence. The Service is responsible for establishing gravity standards throughout Canada by maintaining a first-order network of gravity stations to serve as reference and control points for all regional and detailed gravity surveys. Also, the Service maintains a data bank of all gravity data which meet national standards.

Review of 1983-84

As part of the CESAR 83 project and in co-operation with the Canadian Hydrographic Service and the Polar Continental Shelf Project, 1307 bathymetric and gravity stations were established: 861 stations over the Ellesmere Island continental shelf from the coastline to the 1000 m isobath at a 6 km grid interval, and 446 stations over the Alpha Ridge from the 1000 m isobath seawards at a grid interval varying from 10 to 20 km. In addition 303 stations were established along the drift track of Ice Station CESAR. These data have been combined with older US data, mainly from drifting Ice-Island T-3, for the compilation of bathymetric and free-air gravity maps of the Alpha Ridge.

Plans 1984-85

1. As part of a Lithoprobe experiment proposed for a corridor straddling the Dempster Highway, a helicopter-supported gravity survey will be carried out in a 100 km wide swath between Dawson City, Yukon and Ft Macpherson, N.W.T. The work will include horizontal and vertical positioning by the Geodetic Survey of Canada, using inertial surveying methods. The survey will also attempt to complete a narrow reconnaissance profile from the Highway to the vicinity of Old Crow.

2. In co-operation with Polar Continental Shelf Project and the Canadian Hydrographic Service, a two-year program of regional reconnaissance gravity measurements will begin in March 1984 in Prince Regent Inlet/Gulf of Boothia, the channel between Baffin and Somerset Islands.

3. As part of the concluding phase of gravity observations at points of precisely-known elevation, in support of work done the Geodetic Survey of Canada, a contracted survey will measure gravity at selected lines of geodetic bench marks in the Yukon and the N.W.T.

Geodynamics Service

Responsibilities
The Geodynamics Service of the Earth Physics Branch is responsible for the operation of facilities to monitor earth rotation, the motion of the poles and the stability of the Canadian landmass, and to conduct research into the dynamics of the earth. The Service uses precise gravity measurements and positioning via satellite-based radio systems to monitor movements of the earth and, in the North, motions of the ice pack and ice islands. The Service is also investigating the use of mobile radio telescopes and satellite-receiving equipment to obtain positions and relative motions accurate to a few centimetres over distances of the order of 1000 km. The evaluation of results contributes to an understanding of large-scale strain in the earth and of processes associated with natural or induced earthquakes.

Review 1983-84
As part of the CESAR 83 project, specialized equipment was assembled and computer software developed to facilitate precise positioning of drifting ice stations using the U.S Navy Navigational Satellite System (NAVSAT). A mini-computer was used for real-time data acquisition, and dynamic multi-station Doppler data reduction provided three-hour means of station positions and linear velocity with an average error of about ± 15 m in horizontal coordinates, ± 0.2 m in height and ± 10 m/hour in velocity. Ancillary data on the precision of radio navigation systems (OMEGA, DECCA), meteorological parameters and local sea-ice dynamics were also collected.

Plans were developed for high-precision positioning in support of scientific programs and logistic operations during an ice island project. Additional requirements for monitoring sea surface topograhpy, ice dynamics and ground tracking of special-mission statellites over northern Canada and the Arctic Ocean were identified.

As part of the Canadian participation in the NASA Crustal Dynamics Project, sites were prepared in Yellowknife and Whitehorse where NASA mobile systems will carry out measurements on an annual basis. The measurements are designed to detect small movements of the sites with respect to other points in the U.S. and Canada for the purpose of understanding the on-going large-scale deformation of the Earth's surface. Vertical and horizontal control networks were established around the Whitehorse and Yellowknife sites by the Geodetic Survey of Canada.

Plans 1984-85
NASA mobile systems will carry out the first observations at Whitehorse and Yellowknife in August 1984, as part of the NASA Crustal Dynamics Project. A radio telescope will be set up at each site for approximately one week, in phase 1 of a four-year program of repeated measurements at each site.

The Yellowknife area will be studied as a potential site for a large (25-32 m) radio telescope to be located at high latitude for global geodetic, geodynamic and astrophysical research as part of a proposed Canadian Long Baseline Array.

If resources are approved for an ice-island scientific program, a start will be made on the acquisition and assembly of necessary equipment and on the development of software. This would permit precise tracking of the motion of the ice island now drifting off the northern coast of Ellesmere Island, and would provide positioning support for other experiments conducted from the island.

Surveys and Mapping Branch

Economic Function: General Government Services

Responsibilities
The Surveys and Mapping Branch provides geodetic, topographic and geographic information on the Canadian landmass through the production and distribution of maps, aeronautical charts, aerial photographs, the National Atlas of Canada, the Canada Gazetteer Atlas and gazetteers of place names. The Branch ensures that national, provincial and territorial boundaries are correctly positioned, marked and maintained. Surveying Canada Lands (national parks, Indian Reserves and territorial lands) is an added responsibility of the Branch. Scientific and technical support is provided to other federal and provincial government departments and agencies.

The Branch has seven units: Branch Headquarters, Geodetic Survey Division, Legal Surveys Division, Topographical Survey Division, Reproduction and Distribution Division, the International Boundary Commission and Geographical Services Division.

The Branch Director-General is Chairman of the Interdepartmental Committee on Air Surveys and the Coordinating Committee on Offshore Surveys. The Branch also provides the secretariats for the Canadian Council on Surveying and Mapping and the Canadian Permanent Committee on Geographical Names.

Geodetic Survey Division

Responsibilities
The Geodetic Survey maintains and extends national survey networks to meet the needs of the provinces, industry and other federal agencies. These surveys are used for engineering and natural resource development, environmental studies, national security and national mapping. In addition, they form part of the larger North American Continental reference system.

Review 1983-84

High precision trilateration networks were measured at Whitehorse, Y.T. and at Yellowknife, N.W.T. to monitor the possible movement of Long Baseline Interferometry Stations at these sites. Special order levelling was also used to provide precise elevations at these two locations.

Precise level lines were run from Fort Nelson, B.C. to Fort Simpson, N.W.T. and also from Fort Norman, N.W.T. to Fort Franklin and from Great Bear Lake to Coppermine. This latter portion is a winter project, presently underway, and may continue into April 1984. Precise water level transfers were made across Great Bear Lake between Fort Franklin and Hornby Bay to form part of the Fort Norman to Coppermine line, and also across Great Slave Lake between Yellowknife and Hay River. These two water level transfers are at present being analysed and evaluated.

Extensive satellite Doppler and other forms of mapping control were established in the following regions:

- Arctic Coast; 73 new Satellite Doppler stations in the Coronation Gulf area between 94° and 114° longitude, and seven new points in the Paulatuk, N.W.T. area. In addition, 70 photo-identifications, 20 vertical ties to see level and six conventional angle and distance measurements were made. Fixed-wing aircraft support was supplied by the Polar Continental Shelf Project.

- Northwest Territories; 26 new Satellite Doppler points were established. In addition, 33 elevations were determined by altimeter and 26 points were photo-identified.

- Yukon; Mapping control was established consisting of 7 new Doppler points, 105 trigonometric heights and 21 photo-identifications.

- Baffin Island (south); 61 altimeter elevations were determined.

Support was provided to Project CESAR in the form of one surveyor and five Doppler receivers.

Plans 1984-85

Precise levelling is planned in the Yukon from Whitehorse to Carmacks and on to Stewart Crossing. This is needed to revise old levelling and to strengthen the network.

In the Yukon and Northwest Territories satellite Doppler positioning will be used to provide added density to the primary framework; about eighty primary points will be positioned. In addition about twenty-five to thirty astronomic deflection points will be observed as additional data needed for geoid-ellipsoid computation.

Inertial Survey (ISS) work is scheduled for the Dempster Highway corridor, - about 5400 km of traversing, and an additional 1600 km of ISS work on other Yukon roads. A further 800 km of ISS traversing is planned for Victoria Island to complete work started in 1980.

Satellite Doppler work is scheduled for the Dempster and Campbell Highways, the Canol and Nahanni Range Roads, and in some settlements. This work will be undertaken to upgrade existing control, to support national mapping and to provide general densification. Additional mapping control will be established in the Hudson Bay, Hudson Strait and Foxe Channel region of the Eastern Arctic.

Legal Surveys Division

Responsibilities

The Division, through its Regional Offices in Whitehorse and Yellowknife, is responsible for surveys carried out for land and resource transactions in connection with the development and administration of public and other lands in the Northwest and Yukon Territories. It also ensures the accuracy of surveys, land descriptions and plans of survey prepared under the Canada Lands Surveys Act and other applicable Acts and regulations. The federal responsibilities regarding the definition, survey and maintenance of provincial and territorial boundaries in Canada are delegated to and discharged by the Division. It also provides survey related advice and assistance to local government officers and the public as required.

Review 1983-84

Yukon Territory

- For the Northern Affairs Program of the Department of Indian and Northern Affairs (INA), four contracts involving the resurveying of placer baselines in Yukon were managed by this office; in addition, divisional staff did a control survey to tie various placer baseline surveys together;
- For the Indian and Inuit Affairs Program of INA, three survey contracts were managed as well as six photomapping contracts.
- As part of the regulatory function, the Division examined 70 survey plans, issued 65 sets of survey instructions, and monitored or field inspected eight surveys.

Northwest Territories

- For the Northern Affairs Program three cottage subdivision survey contracts were managed in addition to the ongoing consultation service on surveying and mapping matters throughout the year;
- For the Indian Affairs Program one contract for large scale photomapping was managed as well as property overlay work on ten communities having native interests;
- As part of the Regulatory function, the Division examined 85 plans and issued 75 sets of survey instructions which was complemented by 14 field inspections;
- In developing liaison and communications with other government departments, the Regional Office developed and printed a land information directory and conducted meetings related to land information management and cooperation with 14 other government agencies in the N.W.T.

Plans 1984-85

Yukon Territory

The activities for the coming fiscal year will concentrate principally on surveys for the Department of Indian and Northern Affairs.

Northwest Territories

Similar I.N.A. activity is planned for the coming year with continued development of a comprehensive land information system for the N.W.T. in cooperation with other Federal and Territorial Agencies.

Topographical Survey Division

Responsibilities
To produce and maintain topographic maps of Canada for general purposes at scales of 1:250 000 and 1:50 000, to satisfy the needs of resource development, regional and urban planning and development, environmental management, engineering construction, national defence, and recreation; to provide technical advice to the Canadian International Development Agency and other government departments and agencies on mapping projects, and to provide technical and administrative support to the Interdepartmental Committee on Air Surveys.

Review of 1983-84
In 1983, a total of 12 242 km of aerial photography was flown in the North for 1:50 000 mapping. Indexes showing present status of aerial photography may be obtained from the National Air Photo Library, 615 Booth Street, Ottawa, Ontario K1A 0E9. Topographic map indexes are available from the Canada Map Office, 615 Booth Street, Ottawa, Ontario, K1A 0E9.

In the North, 201 new 1:50 000 maps were completed and 22 maps at the 1:250 000 scale were overprinted with revisions. In northern Canada, 32 maps were revised by the addition of data loated by LANDSAT (land satellite) imagery.

Plans for 1984-85
It is anticipated that 230 new 1:50 000 map sheets of areas in northern Canada will be produced by Topographical Survey during the coming fiscal year. This figure includes maps produced in-house and those done under contract.

In 1984-85 the only aerial photography contract will be for the identification of horizontal and vertical control targets on Ellesmere Island.

Reproduction and Distribution Division

Responsibilities
The Reproduction and Distribution Division is responsible for the photo-mechanical, phototypesetting, lithographic printing and bindery services for the Surveys and Mapping Branch's mapping products and provides reproduction support services to other federal and provincial government departments and agencies, municipal and private sector users, on a cost recovery basis, through the Map Reproduction Centre.

It is also responsible for the storage, retrieval, mail order sales and distribution of all topographical and thematic maps, aeronautical charts and publications and related air information produced by the Surveys and Mapping Branch and specialized maps acquired from other federal government departments, through the Canada Map Office (CMO). CMO also maintains and supports an authorized topographical map and aeronautical chart dealer network throughout the world.

The National Air Photo Library (NAPL) is responsible for the indexing, archiving, retrieval, sale and distribution of products and information related to federally owned or controlled aerial survey, airborne remote sensing and satellite imagery. The NAPL Reproduction Centre processes the film, reproduces the imagery and is custodian of the original material.

Review 1983-84
The Division printed 177 line maps and 12 photomaps at varying scales for the National Topographic Map Series as well as general purpose small scale maps. Map and chart indexes were also printed for all published maps and charts. A total of 84 Aeronautical Charts were printed. This series includes Canada Pilotage, Enroute, Visual Navigation, Plotting and Joint Operations Graphic Air Charts. The Division printed 12 geologial maps for the Geological Survey of Canada. Printing services were provided to Environment Canada for the publication of 24 maps of the Northern Land Use Information Series, and to the Canadian Hydrographic Service of Fisheries & Oceans for the printing of 17 charts of Northern Waters.

The Canada Map Office received 178 requests from the Yukon Territory and 228 requests from the Northwest Territories. This resulted in shipments valued at $42,425 forwarded to the Yukon Territory, and $98,673 to the Northwest Territories.

Requests for air photo products and services included 35 requests valued at $11,652 from the Yukon Territory, and 35 requests from the Northwest Territories valued at $8,695.

Plans 1984-85
The Map Reproduction Centre will continue to provide reproduction and support services in 1984-85. The numbers of items to be printed and services to be provided will depend on user requirements.

International Boundary Commission

Responsibilities
The work of the Commission is largely one of boundary maintenance and regulation of works witin 3 metres of the boundary. The Commission also determines the position of the boundary should questions arise between the governments of Canada and the United States.

Review 1983-84
There was no boundary maintenance required for that part of the boundary north of 60°.

Plans 1984-85
There are no planned operations in the North for the fiscal year 1984-85.

Geographical Services Division

Responsibilities
The Division is responsible for the design and production of small scale maps, The National Atlas of Canada, aeronautical charts and flight information publications; toponymic (geographic names) service; and the provision of cartographic support and advice services to federal and provincial departments and private agencies.

Review of 1983-84

A National Atlas of Canada map on electricity generation and transmission was completed and 10 other Atlas maps were being being prepared for printing. All maps include coverage of Canada's northern areas up to the North Pole. Eight maps showing the status of geodetic control networks in Canada were updated and the base maps of the Yukon and Northwest Territories, MCR 36 (English) and 36F (French) were revised to conform to current language policies.

Cartographic support to other government departments included, 24 Northwest Territories Electoral District maps; 4 Northern Electoral District maps for final reports to Parliament on redistribution of federal ridings; 16 maps on the Royal Tour of the Prince and Princess of Wales; 2 maps on Arctic Canada; 2 Medical Facilities maps and a map of Indian and Inuit Communities in the Yukon and Northwest Territories at a scale of 1:4 Million. All maps included northern Canada in whole or in part.

Toponymic services included a reprint of the Gazetteer of Canada-Northwest Territories, as well as geographic names support for the production of 244 National Topographic Series maps of Northern Canada.

Aeronautical Charting activity for pilots flying under Visual Flight Rules (VFR) in the Canadian North during 1983-84 included the production of 5 new and 19 revised charts at the scale of 1:500 000 and 5 at the scale of 1:100 000.

Chart revision activity for pilots flying under Instrument Flight Rules (IFR) included the following products revised on the indicated cycles: High and Low Altitude Enroute Radio Navigation Charts (56 days), IFR Supplement (56 days), Northern Supplement (56 days), Water Aerodrome Supplement (12 months), Canada Air Pilot Amendments (28 days), Designated Air Space Handbook (112 days), the Flight Planning and Procedures Publication (6 months), and the Polar Plotting Chart (12 months). All the foregoing publications have portions pertaining to flight in the Canadian North.

Plans 1984-85

Division plans for the production of maps, charts and publications with Northern Canada coverage include 6 general purpose base maps of Canada at various small scales, 20 National Atlas maps, 12 Visual Flight Rules (VFR) chart revisions, 2 new large format 1:500 000 scale charts and the normal revision publication cycles of the Instrument Flight Rules (IFR) products.

Polar Continental Shelf Project

Economic Function: Short Range Research

Responsibilities

The Polar Continental Shelf Project (PCSP) is responsible for conducting scientific investigations unique to the Arctic and maintaining and improving logistical support systems for science in the Arctic. This latter responsibility demands the provision and maintenance of base camps, a radio network and aircraft with experienced crews. PCSP supports research in disciplines within the mandate of EM&R and other government departments. Field resources of the branch are also made available to approved university and other non-government research projects.

Review 1983-84

Field work, carried out from mid-February to late September, was co-ordinated from Tuktoyaktuk in the Mackenzie Delta and from Resolute on Cornwallis Island.

A total of 181 scientific parties were supported in the Arctic by PCSP in 1983. The most ambitious project in 1983 in the Arctic was CESAR - Canadian Expedition to Survey the Alpha Ridge. Geological, geophysical and oceanographic investigations of this Arctic Ocean bottom feature were carried out in March, April and May from a camp established on an ice floe. The runway adjacent to the floe was carved out of the pressure ridges by the Engineer Regiment from C.A.F. Base Petawawa. The annual bathymetry/gravity survey was conducted on the north coast of Ellesmere Island using a Decca Navigation System established for the purpose; this survey was tied into CESAR by an extensive corridor of data. The program of physical oceanographic research in the Northwest Passage was continued as were similar concentrated efforts in Barrow Strait. The archeological, wildlife and geological parties continued to gather baseline data prior to any industrial development in the area.

The following agencies were supported in their Arctic research in 1983 by the Polar Continental Shelf Project:

Arctic Institute of North America
British Joint Services Expedition
Defence Research Establishment Pacific
Department of Communications
Department of Energy, Mines & Resources
Department of the Environment
Department of Fisheries & Oceans
Department of Indian Affairs & Northern Development
Government of the Northwest Territories
Government of the Yukon
MacInnis Foundation
National Museums of Canada
National Research Council
Prince of Wales Northern Heritage Centre
Sir Sandford Fleming College
Transport Canada

Universities:
Alberta
British Columbia
Calgary
Guelph
Lakehead
Manitoba
McGill
McMaster
Ottawa
Toronto
Trent
Victoria
Washington
Western Ontario
York

The following is a summary of work to which PCSP contributed support:

Archaeology: Mackenzie Delta Heritage Project, Mackenzie Delta
Investigator: C.D. Arnold, Government of the Northwest Territories

The Mackenzie Delta Heritage Project as initiated in 1983 with three objectives: to conduct rescue archaeological operations at eroding archaeological sites in the lower Mackenzie Delta; to obtain information on the origin of Mackenzie Inuit culture and its development through time; and to provide archaeologica field training to northern residents. Archaeological investigations focussed on the Cache Point site near Cabin Creek on the southeast coast of Richards Island. Test excavations have revealed that architectural details and other cultural remains are well preserved by permafrost and overburden. Dates for the occupation at the site are estimated at 500 - 600 years B.P.[1]

The field school component of the project provided training in archaeological theory and procedures to three students from Inuvik, Fort Smith and Eskimo Point.

Archaeology: Northern Cultural Heritage Society, Stanwell-Fletcher Lake, Somerset Island
Investigator: E. Bielawski, Prince of Wales Northern Heritage Centre

The final phase of a four-year project was completed. The research strategy of the excavation combined the collection of samples, which address problems concerning the nature of the inland portion of the Paleo-Eskimo seasonal round, adaptive response through time to a changing environment at a single location, and the post-depositional history of Paleo-Eskimo remains on gravel beaches.

Concurrent with the site excavation was the fifth season of the operation of the Northern Cultural Heritage Project, a field school and employment opportunity for young Northwest Territorial residents. Eight Inuit students from six communities (Spence Bay, Arctic Bay, Cape Dorset, Eskimo Point, Pangnirtung and Baker Lake) participated.

Archaeology: Paleoeskimo Settlement Patterns, Southeastern Ellesmere Island
Investigator: E.R. Damkjar, University of Alberta

This project is an archaeological investigation of Paleoeskimo settlement patterns along 150 km of biologically and physiographically diverse coastline between Bellot Strait and Creswell Bay. Settlement patterns are studied on three levels: the individual house or structure; the manner in which structures are spatially arranged within communities; and the distribution of communities over the landscape. A variety of ecological and cultural factors will be considered. A second objective is to better understand Paleoeskimo culture historical developments in the area.

The survey resulted in the discovery of 120 previously unknown sites of which at least 37 are Paleoeskimo. The remainder are mostly later Thule or Inuit sites, while a few are of indeterminate affiliation. Preliminary data indicate occupation of the area from early to late Paleoeskimo times.

Archaeology: Archaeological Excavations, Navy Board Inlet
Investigator: G. Mary-Rousselière

Approximately ten square meters were excavated at Saatut II and 279 artifacts were collected. At Nunguvik, investigations were concentrated on house complex N73. The excavation of two square meters begun in 1982 was completed. At N73, 487 artifacts were found.

After several seasons of excavation at Saatut, it can be said that most of the salvage work has been accomplished. Since the time of its discovery in 1967, several thousands of artifacts have been found. At Nunguvik, house complex N73 remains as puzzling as ever, on account of the prolonged occupation of the site. The earliest date recorded is A.D. 15 (A few harpoon heads support this date). It seems that the main occupation, including the construction of most of the stone structures, took place between the 5th and the 7th century A.D. But, for some reason, the Dorset people continued to occupy the same spot for a long time afterwards, and some Thule artifacts can even be found at the upper levels.

Archaeology: Prehistory of the Eureka Upland, Axel Heiberg and Ellesmere Islands
Investigator: P. Sutherland, McMaster University

"The Prehistory of the Eureka Upland" is a long-term project designed to investigate the prehistory of the coastal and interior regions of Ellesmere and Axel Heiberg Islands. The broad objectives are firstly, to provide a more complete culture history of the region; secondly, to investigate the nature of the various culture occupations of the region by examining the types of technology used; and thirdly, to formulate and examine questions relating to culture continuity and changes over the last four thousand years.

Preliminary findings suggest that it may represent a transitional site in terms of the Independence I and later Paleoeskimo occupations.

The artifactural and faunal remains and the other cultural data collected during 1983 are presently under study. A permanent exhibit is being constructed on the prehistory of the Eureka Upland for display in Grise Fiord.

Archaeology: Devon Island Archaeology Project, Truelove Lowland, Devon Island
Investigator: J.W. Helmer, University of Calgary

Limited test excavations have demonstrated excellent faunal preservation in parts of the Truelove Lowland. Also, data recovered from QkHn-13 indicates the possible presence of a very early stage of the Arctic Small Tool tradition in the study area. The significance of this is twofold: the identification of an occupation with Independence I affiliations greatly alters initial interpretations of the local culture sequence of north Devon Island and perhaps, more importantly, the discovery of this complex provides extended time depth for the comparative analysis of Paleoeskimo subsistence strategies in that region.

(1) B.P. Means "Before Present".

Biology: Rat River Charr Project, Rat River, Mackenzie Delta
Investigator: D.V. Gillman, Fisheries & Oceans

A fish fence and trap operation was conducted on the Rat River to enumerate the spawning migration of Arctic Charr and to obtain biological data. Information was obtained on the fecundity and spawning intervals for the Rat River population. In addition, a preliminary study was initiated for IPN[1] disease; results indicate a high incidence of the disease. A further study will establish the infestation rate among western coastal charr populations and determine the possible negative effects of the disease to resident fisheries in the Rat River - Big Fish River areas.

Biology: Beaufort Sea Experimental Fishery, Beaufort Sea
Investigator: D.V. Gillman, Fisheries & Oceans

A total of 12,500 lbs. of pacific herring were captured as a commercial test fishery. The herring, suitable for roe extraction, were flown out to the Inuvik Fish Plant for processing. Six local fishermen were contracted to conduct the fishery through the spring ice and to observe the techniques of the roe fishery. Additional research defined spawning habits and population dynamics of the pacific herring in the region.

Biology: Fisheries Survey Field Report, Melville Peninsula, Southampton Island
Investigator: B. Stewart

Fish, collected using gillnets in lakes and rivers and hoop and trap nets in streams, were weighed and measured in the field. Scales were removed for aging, and stomach contents and parasite loads were examined, preserved and returned to the laboratory for detailed analysis. Samples of zooplankton, phytoplankton, aquatic invertebrates, and water were also taken for laboratory analysis. Residents were interviewed to obtain information on fish distributions and domestic and commercial fisheries. Trout and charr on northern Melville Peninsula were heavily infected with Diphyllobothrium sp., a tapeworm which will infect man if the cysts are ingested without proper cooking.

Biology: Entomology, Tuktoyaktuk Peninsula, Canoe Lake
Investigator: R.A. Ring, University of Victoria

Overwintering mechanisms vary greatly within Hymenoptera. Tenth-redindae are freezing-tolerant. All parasitoid species examined are able to supercool; however, internal parasitoids are freezing-tolerant with their freezing being initiated by host freezing. The external parasitoids overwinter in a supercooled state and are freezing-intolerant in general.

A study of Trichoptera fauna near Tuktoyaktuk reveals species which are derived post-glacially from Beringia (54%), south of the ice sheets (23%) or from both areas (25%). Nine species (43% of the total fauna) are as yet undetermined.

Biology: Zoology - Entomology, South British Mountains
Investigator: G.G.E. Scudder, University of British Columbia

A thorough study of the dragonfly (Odonata) fauna of the Northern Yukon and Old Crow areas was undertaken. Several species (Somatochlora kennedyi, Leucorrhinia patricia, Coenagrion interrogatum), which had been collected only once or twice before in the Yukon, were common in some of the local bogs and fens. Perhaps the most interesting discovery of the season was a high incidence of hybridization amongst Somatochlora sahlbergi, a Siberian emerald dragonfly, and its two closest North American relatives S. Hudsonica and S. Albicincta.

An extensive general collection of specimens around Old Crow yielded a notable first recording, in the Yukon, of an Actitocoris signatus, a rare amphi-Beringian plant bug.

Visits to the alpine tundra resulted in a good collection of hill-topping flies and some very interesting butterflies, including the recently discovered Oenias excubitor. Many spiders, beetles and other ground-loving arthropods were collected in the Bluefish Caves archaeological site. In the fens, the rare emerald dragonfly Somatochlora whitehousei was common, and in the alpine hill-topping flies and rarely collected butterflies were taken.

Several soil samples have yielded a very rich assemblage of mites.

Biology: Algae, Barrow Strait
Investigator: J.C. Roff, University of Guelph

A continuous series of sediment trap samples indicate a rapid flux of organic matter from the epontic community to the benthos just prior to ice break-up. A number of phytoplankton and zooplankton samples will allow estimation of the annual cycle of production in Barrow Strait.

Biology: Marine Ecology, Barrow Strait
Investigator: R.J. Conover, Fisheries & Oceans

As observed in 1982, the reproductive season for Calanus hyperboreus was well underway, but unlike the previous year's observations, the eggs and nauplii were not especially prevalent in the near surface waters. Detailed observations of the water structure in the vicinity of Station 42 emphasized the presence of a strong vertical discontinuity, a fresher, colder near-ice layer overlaying deeper, more saline Arctic Ocean waters.

In mid-April, there was still virtually no evidence for plant production in the water column, although the epontic algal bloom had begun. By May 34d, there was a remarkable proliferation of plants and animals. Primary production in the ice at the beginning of May was 350 times greater than that for the remaining water column.

The under-ice layers also supported a diverse community of animals including harpaticoid copepods, protozoans, nematodes and larval polychaete annelids and bivalve molluscs.

Although the principal zooplankton species in the area were all in or near productive condition, there was little evidence of feeding either in the water column or in the under-ice layer.

Fecundity in the same species over the same period was moderately low and apparently decreasing.

(1) Infectious Pancreatic Necrosis

Biology: Ornithology, Yukon Coast and McKinley Bay
Investigator: L. Allen, Environment Canada

Information was gathered on bird species composition, and abundance and habitat preferences in the vicinity of Stokes Point and Phillips Bay. Additional surveys were conducted at King Point to compare bird densities in 1983 with those found in 1981.

This was the third year of a five-year study to monitor the impact on birds of developing a medium draft port in McKinley Bay. Emphasis remained on documenting the number and distribution of moulting diving ducks. In 1983, as in previous years, concentrations of diving ducks were consistently seen in the area south of the spit at Atkinson Point, and at the end of the bay. Unlike other years, concentrations of diving ducks were also seen just south of the artificial island.

Biology: Ornithology, Frobisher Bay, Lake Harbour, Cape Dorset, Repulse Bay
Investigator: R.G. Bromley, Government of the Northwest Territories

Gyrfalcon production was measured during the middle period of brood raising at 15 gyrfalcon nests in the Central Arctic from Coppermine to Spence Bay.

Preliminary analysis indicated only 50% of 1982 sites were occupied in 1983. Several new sites were located; number of young per nest was similar between the two years, 3.0 in 1982 and 2.9 in 1983. Since nests were observed considerably earlier in 1982 when eggs and small young were present, the number of young fledged per nest would have been reduced somewhat. Nests were initiated one week earlier in 1983 than the previous year despite the late spring.

Biology: Ornithology, Hell Gate, Cardigan Strait
Investigator: A. Dzubin, Environment Canada

Studies on the northern Fulmar have centered on documenting seasonal use of marine foods, breeding bioenergetics during the pre-laying exodus, taxonomic affinities to European and Greenland forms, and colour phases of post-feeding birds. In 1983 collections of birds were made periodically.

Food habits of birds not involved in the energetic study will be examined, through analysis of gizzard and proventriculus contents. Body part measurements and weights were made on all birds. Some 2000 birds were categorized into seven colour phases during prolonged field counts. Comparisons will be made amongst other northern colonies. Also, in 1983, nine cliff faces on the Cape Vera fulmar colony were censused throughout the summer to monitor fulmar abundance. Photographs of cliff faces were obtained and the feasibility of developing a long-term monitoring scheme on such cliffs was assessed.

Biology: Ornithology, Hudson Strait, Northern Hudson Bay
Investigator: A.J. Gaston, Environment Canada

A continuation of underwater studies on the benthic fish, which form the main prey of the Black Guillemots, were carried out from Pitsulak City Island and West Nuvuk Island. In addition to land-based observations on the Guillemots, boat transects were carried out intermittently to study the effect of water depth and bottom-type. Aerial surveys for Sabine's Gulls were also carried out on Southampton, Coats, Prince Charles and Air Force Islands. A study of a Thick-billed Murre colony on Akpatak Island was undertaken. It is estimated that this colony extends over approximately 14 km of cliffs and supports more than 200,000 breeding pairs. It is believed that this is the first time this colony has been surveyed on the ground by non-Inuit, since 1954.

Biology: Ornithology, Resolute, Grise Fiord, Seymour Island, Brodeur Peninsula
Investigator: S.D. MacDonald, National Museum of Natural Sciences

Over 200 adult Ivory Gulls were banded and recaptures of previously banded birds were obtained. In addition, 333 Ivory Gull chicks were banded at Seymour Island and Brodeur Peninsula. The colony at Seymour Island Sanctuary apears to be thriving and is still a major and important site of breeding Ivory Gulls. Helicopter surveys of the ice fields and glaciers north of Makinson Inlet, Ellesmere Island and desert plateaus of Brodeur Peninsula reveal the presence of more Ivory Gull breeding colonies. These two regions can now be defined as very important sites of Ivory Gull production in the eastern Arctic.

Biology: Ornithology, Prince Leopold Island
Investigator: K. McCormick, Environment Canada

This island supports a unique assemblage of four seabird species - thick-billed murre, northern fulmar, black-legged kittiwake and black guillemot. An annotated bibliography of literature relevant to Prince Leopold Island has been completed.

Biology: Ornithology, Prince Marie Bay, Ellesmere Island
Investigator: R.I.G. Morrison, Environment Canada

Studies in 1983 centered around the breeding and post-breeding ecology of High Arctic shorebird populations, particularly the Knot Calidris canutus and the Baird's Sandpiper Calidris bairdii. Studies were made of growth and development of young and of the feeding habits of the birds during the post-breeding and pre-migration phases, in particular to assess the importance that inter-tidal shoreline areas may play in building up fat reserves prior to departure for the wintering areas.

Biology: Ornithology, Truelove Lowland, Devon Island
Investigator: D.L. Pattie, Northern Alberta Institute of Technology

A complete bird census was conducted on Truelove Lowland. There were greater numbers than in previous counts with the greatest increase being in numbers of Bairds. Two wolves were seen for the first time on the Lowland since 1970. Six foxes were seen and one hundred and twenty-nine muskox were divided between Sparbo-Hardy, Skogn and Truelove Lowlands; only two muskox calves were seen.

Biology: Ornithology, Western Jones Sound
Investigator: R.W. Prach, Environment Canada

The objective of this study is to investigate ecological relationships in a High Arctic polynya to aid in predicting the effect of offshore hydrocarbon development and marine transportation on marine wildlife associated with polynyas.

Surveys concentrated on documenting a predicted pre-laying exodus by fulmars just before egg-laying observed in other breeding populations.

Observations on the reproductive biology of common eiders, arctic terns and glaucous and Thayer's gulls on St. Helena, Devil, and Calf Islands and fulmars at Cape Vera, Devon Island continued.

Fulmars and guillemots were collected for energetics, food habits and morphometric data.

Biology: Ornithology, Bylot Island and Northern Baffin Island
Investigator: A. Reed, Environment Canada

Work conducted on Greater Snow Geese emphasized the quantification of the breeding population on Bylot Island, appraisal of breeding density and success in the vicinity of Jungersen Bay, and assessment of ecological requirements during the brood rearing season. Work on Atlantic Brant was limited to leg banding of goslings and moulting adults near Cape Dominion.

It was concluded that breeding had been successful in most areas of suitable habitat on Bylot Island and Northern Baffin Island in 1983, whereas in 1982 large segments of the range on Northern Baffin had been unproductive as had the high arctic islands. A photographic sample determined that 51% of the geese present on Bylot Island were goslings and 57% in the Jungersen Bay sample plot. The mean brood size was 3.20 compared to 3.00 in 1982.

Biology: Zoology, Barrow Strait
Investigator: J.B. Sprague, University of Guelph

Three separate sampling programs for marine invertebrates and fish were conducted. The species of organisms taken and methods used resulted in a collection of species including many copepods. *Gammarus setosus* and *G. wilkitzkii* were collected in the intertidal zone. *Anonyx sp.* and *Boeckismus plautus* were taken in the baited trap. Work is proceeding on the distribution of cadmium within the various species of invertebrates involved. *Parathemisto libellula* contains higher concentrations of cadmium than other invertebrate species taken in the same samples. Work is proceeding on the rates of growth and cadmium uptake in the populations of invertebrates and comparisons between the various groups.

Biology-Zoology: Caribou and Muskoxen, Prince of Wales Strait N.W. Victoria Island
Investigator: D.C. Thomas, Environment Canada

In 1983, Prince of Wales Strait and Amundsen Gulf were surveyed to determine caribou movements. No caribou or trails were sighted, nor were concentrations of caribou observed in coastal areas. Hunters in Holman believe that caribou cross sporadically, in small groups between Banks and Victoria Islands in fall and winter. They have never observed traditional seasonal movements across sea ice comparale to those that occur at similar latitude among Prince of Wales Island, Somerset Island and Boothia Peninsula.

As part of a long-term monitoring program of portions of Melville Island, Muskox were surveyed on the south coast and on Bailey Point. On the south coast, one-hundred and forty-one muskoxen (no calves) were counted in 1982, and two-hundred and thirty-seven (twenty-four calves) in 1983. On Bailey Point, two-hundred and forty-two muskoxen (fifteen calves) were counted in 1982 and two-hundred and eighty-six (thirty-six calves) in 1983. On Bailey Point, the mean group size was smaller in summer than in winter. The mean group size in winter was inversely related to the number of muskoxen in the region.

Biology-Zoology: Caribou, Itza Lake

Investigator: F.L. Miller, Environment Canada

The third and final field season was carried out to investigate the causes of death of newborn migratory barren-ground caribou calves of the Beverly herd on a 5000 km^2 segment of the traditional northern tundra calving ground.

One hundred and one caribou calves and eleven caribou cows were found and necropsied. All the calves in the sample were estimated to be less than 3 days of age at death. The eleven cows were estimated to range from three to eight years of age, based on the wear patterns of their mandibular teeth.

Eighty-seven calves, with objective certainty, were victims of wolf predation, eight died from malnutrition/starvation after becoming separated from their mothers, and three died of pneumonia.

Biology-Zoology: Muskrat, Mackenzie Delta
Investigator: D.E. Jelinski, University of Calgary

The study is to relate geomorphic and biological components of varying habitats of muskrats to population density, seasonal movements and physiological condition. Preliminary results of burrow data reveal that there are pronounced seasonal differences in habitat use; muskrats prefer in summer lake habitats characterized by abundant cover, close proximity to emergent food species, and banks with shallow slopes, while in winter, they appear to prefer habitats with steep banks, and close proximity to .75 m of water. Clearly, the overall strategy of habitat selection by muskrats in this subarctic environ, is the acquisition of resources to maximize fitness in summer and in winter to maximize over-winter survival.

Biology-Zoology: Polar Bear, Northwest Coast of Baffin Island
Investigator: R.E. Schweinsburg, Government of the Northwest Territories

During the spring of 1983, 47 polar bears were captured and marked along the northeast coast of Baffin Island between Cape Hunter and Durban Island. Six of the bears had been marked previously, five from this study and one in an adjacent area. Blood samples were collected from thirty-seven bears for genetic polymorphism, serological and chemical studies.

Since 1980, one hundred and thirty-nine bears have been tagged along the Baffin Coast and already an inordinate number, twenty-five, have been recovered in the hunter kill.

In May 1982, eight satellite-monitored radios were placed on female polar bears in Lancaster Sound and Barrow Strait to study seasonal movements. They were expected to last 14 months, but none transmitted past September 1982. Since the transmitter package included a regular tracking radio, fifty hours were flown during the spring of 1983, in the hopes of receiving a signal from some of those radios and recovering the satellite package. However, unusually heavy ice precluded bears concentrating in their usual manner and no bears carrying transmitters were found.

Biology Zoology: Polar Bears and Seals, Radstock Bay, Dundas Island
Investigator: I. Stirling, Environment Canada

Data were collected on habitat utilization, hunting efficiency of different age and sex classes, effect of harassment, man/bear conflicts, bear interactions. Movements and time budgets have facilitated a better understanding of the management and impact assessment studies.

Under-ice seal vocalizations were recorded and data were collected on seal habitats to study the distribution of over-wintering populations in relation to polynyas, ice conditions, freeze-up patterns, distribution of pupping areas, polar bear distributions and shipping lanes. This work has helped refine and clarify the types of data needed.

The biological importance of polynyas to overwintering populations will be evaluated by studying winter and early spring distribution and abundance in and out of polynya areas.

Research on radio tagging over the past fifteen years in the Beaufort Sea has suggested that bears along the mainland coast are a fairly discrete subpopulation. However, detailed information on movement between the east and west portions of the Beaufort Sea is unavailable. Radio-telemetry, initiated in Alaska in 1980, indicated that most bears tagged north of Alaska spent some time in the eastern Beaufort Sea. In March 1983, in conjunction with the Alaska work, 19 female bears, mostly adults, were instrumented, and follow-up information on subsequent movements is still being collected.

Biology-Zoology: Seals, Holman, Somerset Islands
Investigator: T.G. Smith, Fisheries & Oceans

Research on ringed seal breeding habitat was conducted in Prince Albert Sound, western Victoria Island. Subnivean birth lairs were instrumented with thermistors and microphones to describe the micro-climate and activity of seals. Searches of the breeding habitat were carried out using trained dogs which resulted in the estimation of an annual index of productivity. The period June to late August was spent at Cunningham Inlet studying the behaviour of beluga whales which occupy the nearshore areas of the river delta.

Biology-Zoology: Ringed Seal, Beaufort Sea, Amundsen Gulf, Prince Albert Sound
Investigator: M.C.S. Kingsley

This was the third in a series of aerial surveys designed to examine the effect of hydrocarbon development in the Beaufort Sea on ringed seal density and distribution. The ice conditions in the Beaufort Sea were normal for the season. The shorefast ice was getting thin, and the open water outside it was extensive. In Amundsen Gulf and Prince Albert Sound, cracks and leads were starting to appear and widen. The two westermost transects in Amundsen Gulf were open water. Ringed seal densities in Amundsen Gulf and Prince Albert Sound were 3.02 and 2.34/ km^2, quite similar to previous results of 3.08 and 3.46 in 1981 and 2.61 and 2.03 in 1982.

In the Beaufort Sea stratum, the density of ringed seals was 0.21/ km^2. This was about half the value, 0.42/ km^2, obtained in 1982, when there was no floe ice in the survey area; and slightly higher than 0.15 obtained in 1981, when the ice had been similar to 1983. However, the estimated total visible population, 5350, was similar to that of previous years.

Biology-Zoology: Marine Mammals, Foxe Basin
Investigator: P. Richard, Fisheries & Oceans

A total of 2,725 walrus, 17 beluga, 16 bowhead and 6 polar bears were counted. Most of the walrus were seen in the areas east and south of Hall Beach at the edge of the pack ice, while most of the whales, belugas, and bowhead were seen in the open water north of Hall Beach and east of Igloolik. This is the first reported marine mammal survey of this area and also one of the largest single reported bowhead count in the eastern Arctic.

Biology-Zoology: Beluga Whales, Beaufort Sea
Investigator: R.T. Barnes, Fisheries & Oceans

Data were collected in the Beaufort Sea on the landed beluga distribution by sex and by length. Biological material was collected for tissue samples, frozen milk samples, jaws and eyes.

Biology-Zoology: Bowhead whales, Beaufort Sea
Investigator: J. Cubbage, Canadian Research Collective

Aerial searches were made in the waters north of the Mackenzie District in an effort to photograph and subsequently measure bowhead whales. These measurements will be used to help current modelling efforts to determine net productivity of the bowhead population. Approximately 400 photographs were taken; of these, 153 images of whales were measured with 3-dimensional stereophotogrammetry techniques. Additional images were measured in only two dimensions. The most significant result from this research is the discovery of segregation by size class on the summering grounds; fifty percent of the animals in Franklin Bay were over 14 m long and calves were absent from this area. By contrast, the average length of whales near the Mackenzie Delta was 10.5 m. This segregation confounds efforts to achieve an unbiassed sample of the components of the population.

Biology-Zoology: Whales, Lancaster Sound
Investigator: Rick Hurst, Indian & Northern Affairs

The possible growth in year-round shipping activity through the Northwest Passage has generated a considerable amount of concern on marine mammal distribution and behaviour and hunter success and safety.

Excellent recordings of whale vocalizations and echolocation calls were made on normal and high frequency (120 KHz) recorders. Unique opportunities allowed the recording of individual species calls at very close range. Upon analysis of the tones, it should be possible to document much of the lexicon of narwhal and beluga and to determine the sound source levels for both species.

As in 1982, sound production by the ship was highest in icebreaking when the ship was forced to continually shift from reverse to forward speed and ram the ice under full power. Complete analysis of ship recordings will provide hard data on noise attenuation for evaluating computer model predictions.

Movement of belugas, in particular, was very fast and concentrated; 225 animals passed the ice edge observers in nine minutes. The observation seems to confirm the avoidance reaction to ship noise reported in the previous year's study. Beluga did, however, return to the area of ship entry within approximately 24 hours. Some narwhals remained near the ice edge within a few kilometers of the ship entry, and narwhal again appeared to react less dramatically to the presence of the ship.

Botany: Water Quality Monitoring, Roland Bay, Stokes Point
Investigator: G.R. Mackenzie-Grieve, Environment Canada

The Environmental Protection Service undertook investigations at Stokes Point on the Yukon Coast and at selected rivers draining the Yukon's north slope. The data collected were water quality parameters, sediment characteristics and benthic invertebrate information. Sample stations were established in the upper and lower reaches of the Spring River, Babbage River, Trail River and Deep Creek. The purpose of the study was to collect baseline information prior to disturbance by potential development on the Yukon north slope.

Botany: Truelove Lowland, Devon Island
Investigator: L.C. Bliss, University of Washington

A study was begun of the life history and physiological ecology of Salix arctica, and on muskoxen grazing on sedges. The effect of muskoxen saliva on shoot growth is also being investigated. Levels of nutrients and carbohydrate reserves are being measured in grazed vs. ungrazed plants.

Botany: Alexandra Fiord, Ellesmere Island
Investigator: J. Svoboda, University of Toronto

The following projects were followed: 1) a study of the lowland sedge meadows; 2) a feasibility study of growing potatoes (6 varieties) and vegetables (30 varieties) in solar heated green-houses, constructed on the tundra; and 3) physical environment and plant communities at the plateau and a continuation of micro-meso-climate measurements of the lowland, the plateau and the Sverdrup Pass.

Two trips were made to Sverdrup Pass to survey for richness of vegetation and wildlife. Permanent quadrats were established and an automatic meteorological station constructed. The high arctic gardening experiment was very successful in terms of methods developed, edible crops produced and experience gained. Techniques will continue to improve with further testing of selected crops.

Climatology: Arctic Islands
Investigator: B.T. Alt, Energy, Mines & Resources Canada

Aviation weather reports were collected from sixty-seven stations from northern Ellesmere Island to southern Victoria Island. Eighteen of the stations produced records longer than a month in duration. These records were transmitted to Arctic Weather Central in Edmonton on a real-time basis for use in forecasting.

Climatology-Meteorology: Arctic Islands
Investigator: C. Labine University of Alberta

An overwintering station established in August 1982 was found to be operational; however, because of faulty equipment there was a data gap from early November to early May. The main field activity consisted of deploying several meso-scale weather stations within the Alexandra Fiord Lowland and in Sverdrup Pass. Furthermore, intensive microclimatological investigations of the various tundra surfaces were performed.

Geodesy Coronation, Queen Maud Gulf
Investigator A.R. Eaton, Energy, Mines & Resources Canada

The primary task was to establish new positions using the United States Navy Navigational Satellite System or Doppler Satellite in an area between Coopermine and Spence Bay and in a 300 km east-west area near Paulatuk. These positions will increase the accuracy of existing horizontal control surveys and, when combined with aerial photography, support the 1:50,000 scale topographical mapping program. Eighty-two new Doppler positions were established, at least half of which have elevations determined by trigonometric means or by spirit levelling. This presents an excellent opportunity to evaluate the predicted geoid-ellipsoid separation, the accuracy of Doppler-derived elevations, etc. in the project area.

Geology Lower Cretaceous, Northern Yukon
Investigator J. Dixon, Energy, Mines & Resources Canada

Lower Cretaceous rocks were investigated in the Northern Yukon. Sites for possible uranium and phosphate-bearing rocks were examined, and samples were collected from the Upper Cretaceous Boundary Creek Formation for polynological studies.

Geology Precambrian, Hepburn Island
Investigator W.A. Padgham, Indian & Northern Affairs Canada

A detailed reconnaissance of the Anialik River Granite Gneiss and its enclosing supracrustal rocks was conducted. Two samples (one of the late granite cutting the gneiss, and the other of a rhyolite(?) in the supracrustals enveloping the gneiss), were collected for zircon geochronology.

Preliminary results were released in January as a 1:125,000 scale compilation for 76M/W. Additional geochronology and photography is underway.

Another project completed the mapping of Hepburn Island, 76M/W1/2; six 1:30,000 scale maps are in preparation to be released early in 1984.

Geology Coronation Gulf
Investigator J.M.B. Seaton, Indian & Northern Affairs Canada

Exposures of Rae Group, Epworth and Recluse Group sediments in the northern Bear Structural Province were visited, as were uranium showings on the Asiak River, drilled in recent years. These surveys are of value in effectively monitoring mineral exploration.

Geology Coal, Fort Norman
Investigator D.K. Norris, Energy, Mines & Resources Canada

A field survey was carried out, examining the stratigraphy, structure and sedimentology of the Summit Creek Formation in the Brackett Basin.

Preliminary results indicate that the Summit Creek Formation embraces the Cretaceous-Tertiary boundary with ages ranging from Maastrichtian to Paleocene. It is also an alluvial plain and alluvial fan clastic sequence. The formation includes at least three coal-bearing zones, one coal seam up to about 10 m thick, and several volcanic ash beds with at least one up to 17 m thick. The coals in the Summit Creek Formation range in rank from lignitic to subbituminous. There may be economically significant resources in low rank coals in the Brackett Basin.

Geology Coastal Processes, Jones Sound
Investigator R.B. Taylor, Energy, Mines & Resources Canada

Low altitude video tapes were taken along the coast of Jones Sound while launch surveys were completed off fine tidewater glaciers along northeast Devon Island.

Large submarine glacial deposits off Devon Island suggest that some of the valley glaciers once stood 2 to 6 km offshore for a considerable time before rapidly retreating to near present position. To-day, the proglacial tidewater environments in bays resemble those of the slowly retreating shallow water glaciers in Glacier Bay, Alaska. Most of the Devon Island tidewater glaciers are grounded and are fringed by an ice-proximal shelf. Ice front thickness is commonly 55 to 76 m but at the face of larger glaciers it exceeds 100 m. Sediment gravity flows, observed across the ice-proximal shelf fore-slope, are an important agent in the transfer and deposition of sediment in the proglacial basins.

Geology Stratigraphy, Victoria Island
Investigator A.EvH. Pedder, Energy, Mines & Resources Canada

Joint stratigraphic and paleontologic studies were conducted on northwestern Victoria Island.

Seven sections of Devonian rocks were measured and systematically collected for future petrographic and biostratigraphic work. The structure and paleoecological relationships of the Devonian rocks of Princess Royal Islands were elucidated. Preliminary identification of fossils suggests important new data for correlation of arctic Devonian sequences.

Geology Mineralogy, Northern Yukon
Investigator H.G. Ansell, Energy, Mines & Resources Canada

Mineralogical and geochemical studies continue on a recently discovered unique mineral occurrence in the Rapid Creek - Big Fish River area in the Northern Yukon, now recognized as a classic mineral locality for the rarity and beauty of phosphate mineral species. Specimens for research, preservation and exchange were collected. About seventy microphobe analyses have been made to date, and preliminary results indicate discreetly different chemical populations in the Rapid Creek area. The Hess River mineral is the Mg end-member, penikisite, found in a different geological environment. Due to the complex chemistry of these minerals, new analytical correction factors had to be derived prior to analysis, while other analytical problems are still to be resolved.

A new mineral found during 1983 occurs as finely crystalline radiating aggregates on fracture surfaces in the iron formation.

Geology: Mineral Occurrence, Prince of Wales Island
Investigator: W. Gibbins, Indian & Northern Affairs Canada

The carvingstone potential of ultramafic rocks for the Inuit carving industry (a gross market value of 10 to 12 million dollars a year) was investigated at a site with fair accessibility. However, the limited quantity of large pieces, coupled with the low demand for stone in the nearest community, Resolute Bay, indicates that this locale has minor economic significance.

Geology: Paleontology, Cornwallis, Lowther and Bathurst Islands
Investigator: A.C. Lenz, University of Western Ontario

A detailed collection from the Lower Devonian reef complex of Lowther Island was completed. One important discovery was fossil evidence for late Lower Devonian rocks on Young Island. Another study was undertaken of late Ordovician to Wenlock Chitinozoa and graptolites of Cape Phillips Formation. Sections were sampled in detail on the Laura Lakes area and Rookery Creek on Cornwallis Island. Limestone samples were collected from the Disappointment Bay Formation on Lowther Island for conodonts.

Geology: Periglacial Features, Resolute
Investigator: A.L. Washburn, University of Washington

Quaternary historical studies were expanded, particularly observations relating to the Holocene marine limit and possible earlier limits. Shells were collected from various altitudes and have been identified.

Radiocarbon dates determined to date suggest two age groupings: 10,000 years B.P. and 27,300 - 32,000 years B.P. A selection of shells has been submitted for determination of amino-acid ratios.

Excavations of patterned ground, especially "plugs", were continued and soil samples collected. Excavations were also made to determine the presence of ice wedges. Movement observations to date on a gelifluction lobe and on frost activity in patterened ground are being computerized.

Geology: Geomorphic Processes, Banks Island
Investigator: A.G. Lewkowicz, University of Toronto

Activities were concentrated on south-west Banks Island near the Sand Hills moraine. The study area was selected because more than half the terrain within 500 m of the coast has been affected by thermokarst in the form of ground ice slumps, many of which are now stabilized; but along 10 km of coast eight are still active.

The radiation balance can be modelled for each part of the slump headwall in spite of variability in slope angle and orientation.

In association with the radiation study, measurements were made on the rates of thaw of the ice-rich slump face. A number of ground ice samples were obtained, and thawed to provide information on excess ice content. Preliminary comparisons of radiation received and rates of melt suggest that radiation supplies a greater proportion of the energy required to thaw the slump face than was previously suggested.

Geology: Fluvial Geomorphology, Mackenzie Delta
Investigator: M. Lapointe, Environment Canada

A preliminary reconnaissance of fluvial processes and patterns in the Mackenzie Delta was completed. During spring breakup, airborne observations were carried out on general extent of bank erosion due to floating-ice action. In early summer background information was gathered on channel geometry as well as channel-lake interactions.

The approximate magnitude of bed shear stresses in Middle, Napoiak and east channel reaches was assessed, following breakup, using both velocity profiles and direct measurements of flow depth and energy slope providing a rough indication of the flow strengths available for sediment transport and bank erosion. Channel bathymetry in selected reaches sheds light on patterns of scour and deposition. Bed material samples were collected to assess the distribution of the sand, silt and clay fractions of the sediment load, in the delta channel network.

In late autumn, nine cut bank sites were established in the eastern part of the delta for subsequent monitoring of bank erosion mechanisms, two of which will be provided with time lapse camera systems in time for the 1984 breakup.

Geology: Quaternary Stratigraphy, Yukon Coast, TUK Peninsula
Investigator: J.-S. Vincent, Energy, Mines & Resources Canada

The lithostratigraphic framework was established by means of abundant plant and animal remains collected for radiocarbon or uranium-thorium dating, for amino acid analyses and for paleontologic and paleoecological studies. Oriented sediment samples were also collected for paleomagnetic studies.

Geology: Quaternary, Victoria Island
Investigator: D.R. Sharpe, Energy, Mines & Resources Canada

Preliminary results from landform investigations on Victoria Island show that primary (glacial) fabric is preserved on well drained sites, less than one metre from the surface. This has important implications in the study and understanding of glacial landforms and the assumed intensity of periglacial processes.

Detailed site studies will investigate models of deposition, to improve our understanding of landforms and their enclosed sediments in areas where depositional facial landforms occur.

Geology: Quaternary, Pullen Island
Investigator: P.J. Kurfurst, Energy, Mines & Resources Canada

Experimental drilling and sampling was carried out in early April in an area of frozen seabottom sediments east of Pullen Island. A combination of various drills and sampling techniques and tools was used in an attempt to compare and evaluate drilling performance (advance rate, depth penetration) and capability for the recovery of relatively undisturbed, marginally-frozen soil samples. Piston corers are inefficient. The vibracorer proved to be more efficient with a variety of sampling tools.

Geology: Quaternary, Arctic Islands
Investigator: D.A. Hodgson, Energy, Mines & Resources Canada

The extent of the last major expansion of ice caps and sheets in the High Arctic is poorly understood, partially due to limited investigation, but chiefly because of the widespread absence of the type of morphologic and lithostratigraphic indicators that enable definition of the Laurentide and the Scandinavian ice sheets.

Circumstantial evidence of Late Wisconsinan glacial ice over-running the highest land (Shaler Mountains) was obtained on north-central Victoria Island. On Byam Martin Island, a thin uniform till sheet, up to 135 m a.s.l. and overlain by early Holocene marine sediments, is further evidence of the 10,000 year B.P. Viscount Melville Sound Ice Shelf. On west-central Ellesmere Island, better chronological control was obtained on the prominent drift belt at the fiord heads formed by early Holocene oscillating ice fronts. Further evidence was found that ice retreated to the belt from downfiord. Thus, a coalesced ice sheet must have covered at least central and southern Ellesmere Island, and likely other islands to the south and west.

Geology: Quaternary, East Central Ellesmere Island
Investigator: W. Blake, Jr. Energy, Mines & Resources Canada

Coring for frozen pond sediments served merely to eliminate potential sites on Knud and Bache Peninsulas, as well as near Alexandra Fiord; no sediment was recovered from the four ponds at which coring was attempted.

The main emphasis was placed on study of ice motion indicators, such as striae, and on the collection of erratics. Over fifty pebble counts were completed to provide additional information on former directions of ice flow.

Additional collections of flowering plants and mosses were made on Cape Herschel Peninsula while over 500 samples of algae and shallow water sediments were collected to provide a data base for interpretation of algae found in sediment cores. Collections of living molluscs were made to compare with the fossil fauna found in raised marine sediments and in till. Analysis of lake sediment cores collected in 1980, 1981 and 1982 is continuing, the primary emphasis at present being placed on a core collected near Kap Inglefield in Greenland in 1980.

Geology: Glacial Geomorphology, Northern Ellesmere Island
Investigator: J. England, University of Alberta

Three different projects were conducted on northern Ellesmere Island.

Botanical investigations were conducted on a richly vegetated upland fault block at the entrance to Piper Pass. Both the contemporary bryophytes and the peat will be analysed for species diversity and the fossil material will be dated to determine whether any of this material accumulated during the last glaciation.

Work continued on the extensive raised marine sediments exposed along the southeast shore of Clements Markham Inlet. Several new sections will add to the overall reconstruction of this past sedimentary environment. There is a growing interest in the nature of fiord sedimentation in arctic areas and this study should contribute to the understanding of marine sediments in a glaciated fiord now covered with sea ice.

The mass balance and topoclimatology of the small plateau ice caps immediately north of St. Patrick Bay, Robeson Channel, was studied also. These plateau ice caps have retreated considerably during the recent past and, due to their small size and their proximity to the regional snowline, they provide an excellent index of short-term climatic changes at high latitudes. This study is relevant to the understanding of climatic conditions related to past glaciations in the area as well as to understanding the possible effects of future climatic changes on low elevation snow and ice in the high arctic.

Geology: Sedimentology, East Coast Baffin Island
Investigator: J. Syvitski, Energy, Mines & Resources Canada

The objectives of this project are summarized briefly: 1) to monitor prodelta dynamics with the emplacement of oceanographic moorings; 2) to evaluate placer potential of heavy minerals within the coastal sediments of Baffin Island; 3) to conduct coastal erosion/accretion studies combined with the thermal history of foreland beaches; 4) to survey the proglacial Stewart Lakes, a fascinating turbid enviromment. The lakes once were a marine fiord that have become landlocked since the Little Ice Age. A recent pullback of one side-entry glacier at the mouth has dropped the lake level several tens of metres; and 5) to conduct a survey of sandur-type deltas, evaluating the general Holocene influence of tides, wave activity and discharge dynamics.

Geology: Stratigraphy, Axel Heiberg Island
Investigator: A.F. Embry, Energy, Mines & Resources Canada

Mesozoic strata were studied on western Axel Heiberg Island to clarify both the Mesozoic succession in the area and the regional surface and subsurface correlations. Upper Paleozoic strata and Cretaceous volcanics were also examined.

Geology: Stratigraphy, Axel Heiberg Island
Investigator: W.M. Schwerdtner, University of Toronto

The work included detailed geological mapping, study and measurement of minor structures and rock fabrics and collection of oriented and unoriented rock specimens for the analysis of strain and/or mineral fabrics in the laboratory. Mosaic structures in anhydrite are being used as a strain gauge and preliminary results are very encouraging. Original geometry of the mosaic structures is being established by literature surveys. A preliminary working hypothesis is being developed to explain the narrow zone of canoe-shaped synclines and associated anhydrite spines on western Axel Heiberg Island.

Geology: Surficial Marine, Beaufort Sea
Investigator: S. Blasco, Energy, Mines & Resources Canada

Shipborne high resolution acoustic reflection profiling and seabed sediment sampling were continued to further delineate regional sediment stratigraphy, structure, properties and history to depths of 100 m below seabed. Particular emphasis was placed on the distribution of shallow permafrost and on the morphologic characteristics of ice scour. Slope failures at the edge of the continental shelf that were acoustically-profiled in previous years, were mosaiced and cored to determine the sedimentological and geotechnical properties of the seabed. This information contributes to the assessment failure mechanisms and the timing of such failures.

Time-series studies to measure the impact of the Mackenzie River sediment plume on shelf sediment distribution, transport and accumulation rates were continued.

Nimbus-7 satellite imagery was calibrated to determine surface suspended sediment concentrations by collecting and analysing surface plume samples during satellite overpasses. In addition, CTD, attenuance meter and water column sediment concentration profiling were repeatedly conducted along coastal transects to determine plume characteristics with water depth.

Geology-Geophysics: Alpha Ridge Study, Central Arctic Ocean
Investigator: J.R. Weber, Energy, Mines & Resources Canada

A large scale multidisciplinary expedition was carried out to study the nature and origin of the Alpha Ridge. The study included bathymetry, gravity, sub-bottom and intermediate reflection seismic, crustal refraction seismic, heat flow measurements, coring and dredging, seafloor photography and physical and chemical oceanography. A 1600 m long sea ice runway was constructed at the campsite, at 85° 56'N, 112°30'W. Scientific activities were conducted March 30 to May 23. Bathymetry shows the Alpha Ridge to be more rugged, complex and extensive than anticipated. The junction of the Ridge to the Ellesmere Island Continental Shelf at a depth of about 2000 m is not sharply defined. Gravity and preliminary seismic results indicate that the crust under the Ridge is of intermediate thickness. Gravity anomalies along the Ellesmere Shelf are similar to those along the rest of the Arctic Continental Shelf. Cores recovered include laminated ooze more than 65 million years old. Rock grab samples recovered from the Ridge included highly weathered volcanic basalt, probably of marine origin. Heat flow values were lower than those found in the Fram Basin, Makarov Basin, Canada Basin or on the Lomonosov Ridge.

Geophysics: Paleomagnetics, Sverdrup Basin
Investigator: H.C. Halls, University of Toronto

The objectives of this project are to determine the age of the sills related to the development of the basin and to use the directional property of the remanent magnetisation to study deformation within the basin.

Preliminary results of the Skarre Fiord Syncline suggest that, like the Mokka Fiord Anticline, little or no rotation is required. On the other hand, the NRM results from the Blue Mountain Section V are similar to those of Section II, suggesting a need for anticlockwise rotation to return them to the APW path. A tentative interpretation, pending further thermal and alternating field cleaning, is that on the immediate hanging wall side of major thrusts, an anticlockwise rotation of synclinal structures has taken place, which is manifested geologically by sinistral bending of fold axes on approaching the thrusts.

Two discoveries are relevant: reversed magnetisations occur towards the lower part of both the Mokka and Skarre Fiord section, and there is evidence for an increase in oxidation of magnetic phases with depth in the Skarre Fiord section, a possible consequence of burial metamorphism.

Geophysics: Paleomagnetics, Axel Heiberg Island
Investigator: E. Irving, Energy, Mines & Resources Canada

Paleomagnetic samples (about 300) were collected from seventy-nine sites.

Permain Esayoo Formation basalts and Assistance Formation sandstones were collected to test the westward extent of the anticlockwise rotations observed in Permain collections from Ellesmere Island. Lower and Upper Cretaceous basalts from the Isachsen and Strand Fiord Formations were collected in hopes of identifying for the first time on land the base of the long Cretaceous quiet normal period (that is the M_0 reversal).

Initial analysis of the Cretaceous specimens have identified some reversals in the Isachsen Formation but their exact position in the sequence of M-reversals is not yet known.

Geophysics: Geothermal, Mackenzie Delta, Sabine Peninsula
investigator: A. Judge, Energy, Mines & Resources Canada

Down hole thermal logging was conducted at the Ilisarvik test site on Richards Island and in a new 1000 m deep hole on the Sabine Peninsula. Other surveys of the base of permafrost were conducted at Parsons and Big Lakes.

Efforts were concentrated on the CESAR project in which a gradiometer probe was deployed for 13 measurements of the heat flow through the ocean bottom sediments. Measurements comprised water temperature profiles, sediment temperatures and thermal conductivities, the latter in-situ and on recovered piston cores.

Geophysics: Seismology, Beaufort Sea
Investigators: S. Pullan, J. Hunter, Energy, Mines & Resources Canada

A series of holes in the seabottom of the Beaufort Sea delineate the temperature regime of the near-shore sediments. These are monitored until equilibrium temperature conditions are recovered.

Seismic velocities of the near-bottom sediments were recorded using a bottom-laid array at the drill locations on the Itipok line as well as the line drilled in 1982 off-shore from Toker Point.

The C.C.G. Ship, the Nahidik, was used as a survey vessel for a joint A.G.C./G.S.C. project to obtain information on the near surface sediments by geophysical methods as an aid in the interpretation of the Quaternary history of the southern Beaufort Sea. In summary, 285 line kilometres of seismic data were added to the continuing Beaufort Sea off-shore program. A test of the deep-tow seismic recording system was conducted and the system proved to perform adequately.

The development of seismic filters and software for data retrieval and processing will be required before the system can be completely tested. Ice conditions in the fall did play a major role in the location of the data collected.

Geophysics: Atmospheric Refraction, Tuktoyaktuk, N.W.T.
Investigator: W. Lehn, University of Manitoba

The phenomenon most frequently observed was the inferior mirage. Numerous solar observations were obtained for sun elevations near the horizon. Included was a complete sequence covering the onset of the midnight sun. Optical phenomena such as the green flash and distortion of the solar ice were frequent, but the Novaya Zemlya effect did not appear.

Superior mirages which are much more complex in nature and hence more interesting scientically were not as frequent as expected. However, several good instances were observed and recorded affecting objects whose distances lay in the range from 20 to 60 km.

Glaciology: Expedition Fiord, Axel Heiberg Island
Investigator: W.P. Adams, Trent University

Measurements of mass balance were taken on White Glacier. Existing stakes were re-drilled while others were established.

Detailed chemical profiles were obtained for the full water column of Colour Lake, Expedition Fiord, and for a series of cored tubes from its ice cover. In addition, chemical samples were obtained from steams feeding the lake.

Glaciology: Northern Ellesmere Island
Investigator: M.O. Jeffries, University of Calgary

A wire strainmeter installed on Ward Hunt Ice Shelf recorded vibrations of 35-40 second and 20 minute periods, probably related to the ocean swell at the ice front and internal waves beneath the ice shelf respectively. Ice conditions along 180 km of coast-line between Cape Albert Edward and Hansen Point were noted. About 40 km^2 of ice had calved from the east end of Ward Hunt Ice Shelf since spring of 1982.

Stratified Lakes A and B and Disraeli Fiord were investigated again and stratified water conditions were discovered at the south end of Milne Fiord.

Glacier Physics: Arctic Islands
Investigator: R.M. Koerner, Energy, Mines & Resources Canada

The mass balance of Melville South, Northwest Devon, Meighen and Northern Agassiz ice caps was measured. In addition, on the Agassiz Ice Cap, bulk snow samples were collected, melted and filtered for pollen studies, borehole tilt and diameter were remeasured at two borehole sites, and several one-litre samples of the last 30 years of snow taken for graphite particle (soot) analysis.

Hydrology: Inuvik-Tuktoyaktuk Corridor, N.W.T.
Investigator: J.C. Anderson, Environment Canada

The primary aim has been to identify potential trouble spots (e g. icing sites) and acquire data relevant to highway culvert and bridge design.

Field studies continued at several watersheds in the taiga and tundra zones of the Inuvik-Tuktoyaktuk region. Data were gathered on snowpack water equivalent, river channel and culvert icings, precipitation, air temperature and discharge.

Hydrology: Mackenzie Delta
Investigator: S.C. Bigras, Environment Canada

Intensive field study of the hydrological regime of some lakes and channels was undertaken in the Mackenzie Delta to assess the potential impact of increased flow regulation upon the Delta lake levels, water quality characteristics, and the interactions between unconnected lakes, connected lakes and their channel systems.

Water levels at 9 sites along the eastern sector of the Delta were monitored using 16 mm time lapse photography from April to September. Water quality analyses were undertaken prior to and after the breakup and at low water level conditions. Other data were gathered on snowpack water equivalents, ice thickness, water temperatures, wind direction and velocity and amount of precipitation.

Preliminary analysis of 1982 and 1983 data suggests that backwater flooding due to ice jamming, during the breakup period, is the critical factor in the Delta lakes regeneration. Hydrochemical analysis revealed spatial and temporal trends in the Delta lakes' water quality characteristics.

Hydrography: Beaufort Sea
Investigator: J.A. Vosburgh, Fisheries & Oceans

The deep draught shipping corridor across the Beaufort Se started in 1981 was completed. No pingos were found at the eastern end of the corridor, the shoalest depth found in 1983 being 25.9 m.

An area north of Baillie Islands was surveyed at a scale of 1:100,000 and work was started on a standard navigation chart survey between Herschel Island and the Alaska border.

Hydrography: Barrow S...
Investigator: D. St. Ja...ues, Fisheries & Oceans

Hydrographic and oceanographic surveys were carried out with a Deep Access Reconnaissance Television. The D.A.R.T. was equipped with upward and downward looking sounding transducers and a gyro compass. The survey indicates that the D.A.R.T. could maintain a preselected depth for sounding but failure of the gyro precluded the completion of a detailed survey.

The D.A.R.T. was also used to attempt to locate a tide gauge mooring in Barrow Strait and to pass lines under the ice; it was unable to locate the test mooring but was successful in passing lines under the ice between two holes.

The rotary side scan was also used to attempt to locate the test mooring. The side scan could not locate the mooring without the aid of an acoustic transponder.

Hydrography: Currents, Dease Strait
Investigator: M.J. Woodward, Fisheries & Oceans

The objective of this project was to measure near-surface currents (10 m) in Dease Strait and to evaluate the performance of Applied Microsystems RCM-12EX current meters. These current meters are designed for ice-mounted applications with the data recorder mounted in a well near the ice surface.

Currents were recorded at the most northerly station. The temperature recorder performed well at ambient temperatures reaching -37°C without shelter or heating.

Hydrography: Tidal Survey, Prince Regent Inlet, Bellot and Barrow Straits
Investigator: D. St. Jacques, Fisheries & Oceans

Tidal surveys were undertaken in four areas. In Prince Regent Inlet, four tide gauges and four current meters were deployed; preliminary results indicate a maximum tidal range of 2.8 metres, and a propagation time of 1 1/2 hours from Lancaster Sound to Bellot Strait. The Bellot Strait gauges were installed to verify previous data; the results support the earlier survey. Three gauges were deployed in support of the long-term study of oceanographic processes in Barrow Strait. Lastly, one gauge was deployed off the north coast of Ellesmere Island to confirm the sounding reductions used for the hydrographic survey of the same area.

Hydrography: Tidal Surveys, Northwest Ellesmere Island
Investigator: S.T. Grant, Environment Canada

Five gauges were recovered and all produced good quality data records. A cotidal chart for Jones Sound was constructed from these data sets, and six additional tide gauges were deployed at Thule Airbase, northern Baffin Bay, Coburg Island, Belcher Point, King Edward Point and Cape Skogn; all but the gauge at Coburg Island were recovered.

Hydrography: Tidal Surveys, Arctic Islands
Investigator: F.E. Stephenson, Fisheries & Oceans

The objectives of this project are to obtain accurate measurements of tidal and long-term water level variations in waters contiguous to the Arctic Archipelago and to provide these data for studies of long-term variations in net transport through the waterways of the Archipelago.

Bottom-mounted pressure gauges were installed at Mould Bay, Isachsen and Auldhild Bay, and the two instruments at Ponds Inlet are complete. Six months of data were collected at Mould Bay and one month only at Isachsen.

Oceanography: Parry Channel
Investigator: R.A. Lake, Fisheries & Oceans

Nineteen current meters and three water level gauges were deployed during late March - early April and were recovered mid-June; they provided data on the propagation of the tidal signal and on the magnitude and direction of tidal and mean flow in these ice-covered waters during spring. In addition, a year-long mooring comprised of two current meters and a water level gauge was installed in Austin Channel to investigate current variability throughout the year. Water structure was determined from 30 CTD profiles which were supplemented by 52 CID profiles from waterways adjacent to the Northwest Passage. Water level data in Prince of Wales Strait was successfully collected over a 15-month period. These data, augmented by local summer weather stations established for that purpose, will permit determination of integrated channel flow from cross-channel pressure differences. Analysis of all data to the end of 1983 has provided information on surface current patterns in Prince of Wales Strait, Viscount Melville Sound and adjacent waters and an understanding of the upward flux of heat from the Atlantic water in the region which warms the subsurface waters of the Northwest Passage which, when brought to the surface over sills in the central Archipelago, contributes to the formation of polynyas or their unstable sea ice covers.

Land Use Study: Melville Peninsula, Southampton Island
Investigator: G. Ironside, Environment Canada

Lands Directorate scientists undertook ecological land surveys, coastal landform classification and reconnaissance soil surveys throughout the areas of Melville Peninsula and Southampton Island as well as a detailed terrestrial ecosystem mapping of Coats Island. These studies are in support of the Northern Land Use Information Mapping Series.

Photogrammetry: Mackenzie Basin
Investigator: T.D. Prowse, Environment Canada

An intense study of ice jam processes was undertaken at the confluence of the Liard and Mackenzie Rivers. The downstream advance of the break-up front was monitored by light aircraft using an Enviropod 35 mm remotely-controlled, camera system and a field portable video camera and recorder. Two 16 mm time-lapse cameras were also located on the ground at the mouth of the Liard River. Hydrometeorological observations near the confluence included ice surveys, water level and velocity measurements, and the measurement of the energy balance of the ice sheet prior to breakup. Once a jam was established, water temperatures were

measured using an infra-red radiation thermometer. The jam remained intact for just over a week which offered a unique opportunity to study the processes which lead to the deterioration and final release of ice jams.

Relevant hydrologic and climatic data records are now being analysed to determine the long-term, relative importance of hydro-thermal and mechanical forces to break-up and ice-jamming.

National Parks Survey: Various Arctic Locations
Investigator: T. Kovacs, Environment Canada

Possible pack boundaries were examined and information for future planning was collected for the proposed northern Yukon National Park and in north Baffin Island. Researchers in the proposed northern Ellesmere National Park were interested in park management requirements. The findings will be essential in determining how to manage the proposed park between the time it is established and before detailed plans are proposed.

Oil Spills: Cape Hatt
Investigator: G.A. Sergy, Environment Canada

A variety of scientific field studies were conducted during the summer of 1983.

The Shorelines Countermeasures Program was continued; oil plots established in 1980, 1981 and 1982 were profiled and resampled for chemical analysis. In addition, maps of the surface oil on Bay 11 were prepared and this site also resampled and resurveyed. A significant portion of oil still remained on the Bay 11 beach.

The nearshore study was a continuation of existing monitoring programs using design and techniques identical to those utilized in previous years. Collections, for hydrocarbon analysis, were made of surface and subsurface waters, subtidal sediments and the tissue of five benthic animals in the four experimental bays of Ragged Channel. Collections of oiled beach material were made in Bay 11 and the Z-Lagoon plots, as well as water, tissue and sediment from Milne Inlet.

Experiments related to the dynamics of hydrocarbon uptake and clearance in Cape Hatt invertebrates were conducted on site.

Remote Sensing: Tuktoyaktuk, N.W.T.
Investigator: J.F.R. Gower, Fisheries & Oceans

A joint industry-government remote sensing experiment arising from an Unsolicited Proposal was conducted from Tuktoyaktuk to study and explore the possibility that oceanographic variables such as water colour and temperature can explain year-to year changes in the distribution of the Bowhead Whale on the southern Beaufort Sea.

Two systematic aerial surveys of ocean colour were made.

Sea Ice: Adams Island
Investigator: R. Frederking, National Research Council

Adams Island at the intersection of Lancaster Sound and Navy Board Inlet was selected for a study of ice interactions. Ice conditions in the area include level first-year sea ice, pressure ridges, hummock fields, multi-year ice flows, pack ice and icebergs.

Several visits were made to characterize ice conditions and interaction processes at freeze-up, in mid-winter and shortly before break-up.

A super 8 movie camera operating in a time lapse mode successfully recorded the events up to an including break-up.

The deformation field around the island showed compressive ice strains normal to the island on the upstream side and extensional strains to either side of the island.

VHF/UHF Propagation: Rea Point, Resolute, Jones Sound
Investigator: J.I. Strickland, Department of Communications

Unusual propagation phenomena of VHF/UHF radio waves have been observed and recorded in an on-going experiment related to overall communications in the Northwest Passage.

P.C.S.P. support was also provided for:

- a film documentary on science in the Arctic;
- an investigation of Bowhead Whales in the Baffin Island coast and Foxe Basin;
- a study of fish migration at King Point;
- a study of the tundra peregrine in the Northern Yukon;
- investigations of migratory birds at Anderson River and TUK Peninsula;
- a study of coastal fish migration at Tuk Harbour;
- a camp cleanup at Dundas Island;
- sea-ice classification surveys at Navy Board Inlet;
- investigations of biological marine sediments benthos in the Beaufort Sea, Hall Beach, Hutchison and McKinley Bays;
- underwater investigations of the Breadalbane at Beechey Island;
- oceanographic surveys in the Resolute area;
- various geological surveys of stratigraphy and paleontology nature in the areas of Cornwallis, Prince of Wales, Bathurst and Somerset Islands, Boothia, Brodeur and Grinnell Peninsulas;
- investigations of geomorphic processes at Tuk peninsula and Horton River;
- surficial geological mapping surveys of southern Ellesmere Island;
- tidal surveys at Jones Sound, Bylot and Devon Islands;
- archaeology surveys near Bathurst Peninsula and the Mackenzie Delta;
- various types of environmental inspections; and
- a project to study sediments in some lakes on Banks Island.

Plans 1984-85

The 1984 Arctic field season will see more than 200 scientific parties conducting their individual and characteristic investigations in the Canadian Arctic. The continuing bathymetry/gravity reconnaissance surveys will proceed in Prince Regent Sound, while oceanographic investigations of the Northwest Passage will be resumed. Wildlife and geological investigations will be very prominent. A scientific station may be established on a drifting ice island - a large piece of ice calved from Ward Hunt Ice Shelf in late 1982/early 1983; the ice island has been marked by a telemetering buoy.

Canada Oil and Gas Lands Administration (COGLA)

Economic Function: General Government Services

COGLA administers and regulates petroleum activity on the Canada Lands. This is an area encompassing 6.4 million square kilometres in the Yukon, the Northwest Territories and other areas north of 60 degrees latitude, which are under the jurisdiction of the Minister of Indian Affairs and Northern Development, as well as another 3.8 million square kilometres off the East and West Coasts, under the jurisdiction of the Minister of Energy, Mines and Resources. COGLA's authority comes from two statutes: The Canada Oil and Gas Act, which provides it with broad regulatory authority on the Canada Lands; and the Oil and Gas Production and Conservation Act of 1979, which gives it authority to regulate drilling and other exploration operations.

At headquarters in Ottawa, COGLA is divided into six branches, which have administrative, regulatory and policy responsibilities in virtually every area of hydrocarbon activity. These branches include the Land Management Branch, the Resource Evaluation Branch, the Environmental Protection and Engineering Branches, the Canada Benefits Branch and the Policy Analysis and Coordination Branch.

In addition, COGLA's regional offices in St. John's, Halifax and Yellowknife and the branches receive input and support from other federal government departments that also have regulatory responsibilities in the offshore. These include the Canada Coast Guard on marine matters, Environment, and Fisheries and Oceans on environmental concerns, the Canada Employment and Immigration Commission with respect to employment considerations, and the Department of Regional and Industrial Expansion for matters pertaining to the development of industrial strategy.

Review 83-84

In 1983, COGLA negotiated 36 exploration agreements with petroleum companies in the North. The companies committed themselves to drilling up to 45 wells over the period covered by the agreements, which generally last from one to five years. Total estimated value of these drilling programs is more than $2.5 billion.

Mainland Region

In 1983, Esso Resources Canada Limited continued work on its Norman Wells Oilfield Expansion Project, which began in 1982. Fifty-seven wells were drilled and four of six artificial islands to be constructed in the Mackenzie River were completed. Administration of design approvals on the Norman Wells project is COGLA's responsibility. In 1983, COGLA carried out surveillance of the drilling, production and construction operations, which included regular on-site drilling and safety inspections. Production facilities related to the existing refinery and the proposed central processing facility were also inspected. All production and injection wells and testing procedures for the pipeline gathering system were checked. Officers monitored compliance with environmental protection standards, such as oil spill prevention and clean-up measures, and water quality.

In 1983, 27 exploration agreements were concluded in the Mainland Region. Under these agreements, which have terms ranging from one to five years, petroleum companies committed themselves to drill up to 30 wells. Total cots associated with these drilling programs are expected to be in the range of $230 million.

Aside from development drilling at Norman Wells, three wells were drilled in the Mainland Region. All were dry and abandoned in 1982 - 83 winter drilling season, and a fourth well was spudded late in the year.

Most drilling in the Mainland Region resulted in short-term employment opportunties for residents of nearby areas. More than 33 per cent of the 275 jobs created by these drilling programs were filled by northern residents. The Norman Wells project created job opportunities for more than 1,000 residents of the Yukon and the Northwest Territories. Approximately $64 million has been invested to date as a result of contracts signed between Esso Resources Canada Limited and Interprovincial Pipelines (NW) Ltd.

Mackenzie Delta-Beaufort Sea Region

In 1983, eight exploration agreements were concluded. In the Beaufort, operators committed themselves to drill up to 15 wells, and total costs associated with their drilling programs over the periods of the agreements are expected to be approximately $2.3 billion.

In 1983, 12 exploratory wells were either spudded or re-entered. Four drillships, three artificial island-based drilling rigs, one conical drilling unit and one land-based rig were active in this region. Because of increasing drilling activity, COGLA opened an inspection office in Inuvik with two, fulltime inspectors. The inspectors are responsible for both offshore sites and land rigs. The activities of this office will supplement those of COGLA's office in Yellowknife.

Drilling operations created 2,000 job openings for Canadians, over 620 of which were recruited from 30 northern communities. Almost 100 per cent of the Beaufort Sea workforce is Canadian.

Formal training programs to enable northerners to assume positions in the petroleum industry continued in 1983. Some of this training consists of Canadians working on the job with non-Canadians to enable the former to eventually assume relatively senior positions on drilling programs.

Total operating expenditures of drilling programs in the region was approximately $658 million. Almost $480 million (73 per cent) was spent purchasing Canadian goods and services. Over 10 per cent of the Canadian expenditures were made in the Mackenzie Delta-Beaufort region.

Arctic Islands

In 1983, no exploration agreements were concluded. This was because exploration over the next five years was covered in 21 agreements that were concluded in 1982 with Panarctic Oils Ltd., the operator in the area. Five wells were completed in 1983.

Operators spent a total of $74 million in seismic and drilling expenditures in 1983. Of this, 78 per cent, or $58 million, was spent on Canadian goods and services. Approximately four per cent was spent in the region.

During the seven-month season, there was a monthly peak of 237 jobs, of which 47 were filled by Inuit hired from the communities of Pond Inlet and Arctic Bay. The remaining 190 were filled by Canadians recruited throughout the country.

Hudson Bay

In 1983, more than 8,000 kilometres of seismic were shot, creating a total of 34 jobs on seismic vessels. Twenty positions were filled by Canadians and 14 by non-Canadians. Native persons from the region were hired as environmental observers. Canadian Occidental initiated an extensive environmental overview of the Hudson Bay region. Total spending relating to the seismic activity was $7 million, of which approximately 35 per cent accrued directly to Canada. Support services for the seismic program, such as crew transfer and emergency evacuation, were again provided using helicopters based on Churchill. In May, 1983, the Hon. Jean Chrétien, Minister of Energy, Mines and Resources and the Hon. John Munro, Minister of Indian Affairs and Northern Development, approved the establishment of a Hudson Bay Oil and Gas Committee to represent residents of the region who may be affected by hydrocarbon exploration activities.

Environment Canada

Atmospheric Environment Service

Economic Function: General Government Services

Responsibilities

The Atmospheric Environment Service (AES) provides services and information relating to weather, climate, ice and air quality. the Service's activities contribute to the safety of Canadians and the security of their property. AES services include historical, current and future information on weather, climate, sea-state and ice conditions for all areas of Canada and contiguous waters. Through its observation and communication networks and Arctic forecast systems, AES receives and processes surface observations and upper air information throughout the year, conducts ice reconnaissance missions and provides consultation on, and forecasts of, atmospheric, ice and sea-state conditions.

The Service is involved in northern development and exploration through its participation in the federal Environmental Assessment and Review Process (EARP). Because concern for environmental quality has been increasing in recent years, the AES has become more involved with air quality. It has helped to develop national objectives for the quality of the ambient air and has carried out research, provided information about the environmental aspects of acid rain and toxic chemicals, and has participated in international air quality negotiations.

Review 1983-84

AES continued to provide support to other departments and agencies (seismology and geomagnetic programs for EMR; communication installation support to DND, etc.), and appropriate weather support to scientific expeditions, such as the Finnish trek to the North Pole in March-April, 1984.

Plaques, commemorating the 35th anniversary of the establishment of High Arctic Weather Stations (HAWS), were presented at Eureka and Resolute in July, 1983 and at Mould Bay in January, 1984.

A modular weather station was opened at Pond Inlet in October, 1983. Construction of a new upper-air operations building at Norman Wells was near completion at year end. New hydrogen gas generators were installed at a number of Arctic Stations and a major upgrade of meteorological instruments was initiated at several sites.

Additional improvements were made to the communications facilities in the North, including successful trials of satellite links to Frobisher Bay from both Montreal and Edmonton, and of an experimental meteorburst communications system between Sachs Harbour and the Beaufort Weather and Ice Office at Tuktoyaktuk. New software for data communications terminals, to improve message handling capabilities, was installed at a number of weather stations in the North. A tripartite agreement was signed by AES, the Department of Transport and the Department of National Defence for the High Arctic Communications System which has been operating successfully on Northern Ellesmere Island since September, 1982.

Two studies were commissioned by AES for 1983. The Clarke Institute of Psychiatry Study on "Work Conditions in Isolated Environments" completed Phase B of an investigation of stresses and problems involved in living and working in isolated environments. The report of the Harrison Study "High Arctic Weather Stations - Their Future" completed in December, 1983, was distributed to other appropriate government departments and private agencies.

Contracts with several native co-operatives and native people for the provision of meteorological and housekeeping services were issued.

Special weather briefings were given for ministerial visits to Inuvik, Yellowknife, and Tuktoyaktuk.

An Arctic Aviation Treasury Board Submission for Aviation Weather Services North of 60°N was approved.

Scientific Services Division staff were actively involved in a number of studies, planning meetings and other activities such as public hearings on the Beaufort Sea; an Arctic Wind Assessment Project; monitoring of Arctic haze and of the effects of CO_2 on the Arctic environment; planning for surface water chemistry monitoring in the Northwest Territories; involvement in the Mackenzie River Basin study on water quality and support to an air pollution study in the Yukon River Valley.

Research continued in a number of areas. Included were experiments to measure concentration of airborne pollutants and the development of forecast models for surface winds; iceberg deterioration and drift; freezing spray; ocean waves; storm surges and marine oil spill trajectories.

Work was undertaken on developing design climatologies for the offshore areas of the Canadian Arctic, and further development of the software packages to facilitate analysis of data was carried out. A program to investigate the possibility of examining and monitoring climatic change in permafrost zones was initiated, and a draft version of the regional climatology of the Yukon was completed.

Planning to enable the provision of year-round ice information services in the Arctic was begun. This service will be available in 1986.

Plans 1984-85

Improvements of services to aviation will include the preparation of terminal forecasts for five additional sites in the Eastern Arctic; initiation of transcribed weather broadcasts from Yellowknife, Inuvik and Cambridge Bay and the installation of APT satellite receiving antennae at Yellowknife and Inuvik.

The motion and frequency of icebergs in marine areas from Lancaster Sound to Davis Strait will be studied further. Modelling and forecasting techniques will be developed to enhance year-round arctic ice information support to offshore activities.

Work will continue on the adaptation and evaluation of weather, ice and environmental forecast methods and systems for the North. Research will continue into processes of pollutant transport, removal and effects. Air monitoring efforts will be consolidated at Alert, as of June 1984.

Development work on offshore climatologies will continue, with emphasis on wind, wave and climate change aspects.

In addition to operating and maintaining the present program, AES will continue to co-operate with the territorial governments, scientific agencies and industry to facilitate effective planning, improve services and ensure protection of the environment.

Central Services Directorate

Responsibilities

Central Services Directorate (CSD) provides through its Ice Branch, information to support transport and resource exploration needs in the Arctic. It also provides computing services; technical and professional training; maintenance support for data acquisition networks; and expertise for developing and using atmospheric instruments and systems.

Review 1983-84

An experimental meteorological communications system between Sachs Harbour and the Beaufort Weather office at Tuktoyaktuk to transmit weather data was installed and operated in conjunction with Dome Petroleum of Calgary. The successful performance of the system resulted in plans for an expanded system to be installed in 1984-85.

A field trial using ANIK satellite communications facilities to provide on-line computer access from the Frobisher Bay Weather Office and the Alberta Weather Centre computer system in Edmonton was successful.

The information services provided by Ice Branch (current and forecast ice conditions, consultation, climatology) continued to increase in scope. In April 1983 a third "ground truthing" experiment relating to the microwave signatures of ice, this time under conditions with known "second-year" ice, was successfully completed at Mould Bay.

Plans were laid to provide year-round ice information services in the Arctic beginning in 1986. To this end, a DASH-7R has been ordered to serve as the third ice reconnaissance aircraft. All three aircraft will be equipped with "all-weather" remote sensing equipment, a semi-automatic data integration and analysis system and secure high-quality communication systems. Tenders have been called for building hangars at Inuvik and Resolute to ensure the service's effectiveness. Work has begun to upgrade the facilities and capability of the Ice Centre in Ottawa. The systems will be further developed to provide a year-round ice information service.

The Training Branch continued to provide formal weather observing courses for staff assigned to the DEW Line and AES Weather Stations in the Arctic. Courses were held at the training centre in Winnipeg, Manitoba and the Transport Canada Training Institute in Cornwall, Ontario. The Branch worked with the Northwest Territories Government to train staff during the year. Examinations were provided for training courses of Observer-Communicators for Arctic Community Airports.

Plans 1984-85

A prototype meteorburst communications system is planned for Mould Bay, Sachs Harbour, Tuktoyaktuk and Yellowknife for 84-85, which if operationally acceptable, will replace the present Radio teletype system at Mould Bay and will relieve overloading on the present circuits at the other locations.

The National Weatherfax Network 1801 will be extended to Frobisher Bay in the summer of 1984. All chart transmissions from CMC in Montreal will be received at Frobisher using dedicated ANIK satellite communications facilities. A further extension of the network to Resolute Bay is being considered for 84-85.

Training Support Services for all weather-observing programs in the North will be provided at the same level as in 1983.

Atmospheric Research Directorate

Responsibilities

The Atmospheric Research Directorate (ARD) advances knowledge and understanding of the nature and behaviour of the atmosphere and its constituents and their interactions with man, his activities and other components of the natural environment.

Review 1983-84

Meteorological Services Research Branch (MSRB) researched and developed methods and systems for forecasting weather, ice and environmental parameters in the North. In particular:

- Empirical weather prediction methodology was applied in developing forecast equations of surface wind at Canadian airports, including some northern locations. The feasibility of forecasting cloud ceilings and visibility in the southern Beaufort Sea by empirical methods was investigated.

- A model to predict the deterioration of icebergs was developed and tested on selected cases. Additional testing of a berg drift forecast model was carried out and a method of using observed berg drift for determining near-surface ocean currents was developed. The plan is to use ocean currents so determined for input to the berg drift forecast model.

- Work continued on upgrading the sea ice and ice thermodynamics forecast models for application in the Ice Branch ice forecasting system. Using climatological data at several northern locations, the ice thermodynamics model was found to simulate very closely the average dates of freeze-up and break-up for these locations, thus indicating possible applications in climatological studies.

- The quality of surface wind analyses and forecasts from the numerical weather prediction models at Canadian Meteorological Centre was determined by comparing these data with available ship reports and Seasat data in the north. The results will provide useful information on the potential of winds from numerical weather prediction models for operating ice and environmental forecast models.

- A prototype freezing spray forecast system was implemented at Canadian Meteorological Centre and evaluated for correct performance.

- Further testing was carried out on a comprehensive marine oil spill trajectory forecast system for open seas. Planning to study the problem of spill movement in the presence of unconsolidated sea ice was begun.

- An ocean wave forecast system was evaluated and a cooperative activity was developed to evaluate an industry-operated version of the system for the southern Beaufort Sea with data obtained in the summer of 1984.

- The feasibility of applying a storm surge forecast model in the southern Beaufort Sea was investigated and initial planning for this adaptation of the model was carried out.

Air Quality and Inter-Environmental Research Branch continued to measure, at Mould Bay, Alert and Igloolik, the weekly-average concentration of airborne pollutants originating from mid-latitudes. In addition, light scattering measurements related to visibility were conducted on a continuous basis at Mould Bay and Igloolik as part of an international study of the nature and origin of "Arctic Haze", a wintertime phenomenon caused by man-made particulate matter.

Plans 1984-85

Work will continue on the adaptation and evaluation of weather, ice and environmental forecast methods and systems for the North. Specific plans include: development of empirical cloud forecast equations at some northern locations; comparison of various formulations of wind-driven water currents for application in environmental prediction models; evaluation of the freezing spray forecast system; evaluation of empirical wind forecast equations for some northern airports; introduction of a multi-category ice thickness scheme in the regional sea ice forecast model; a comprehensive evaluation of the parametric wave forecast system for the Beaufort Sea and the mounting of a storm surge forecast model in the southern Beaufort Sea.

Air monitoring efforts will be consolidated at Alert, as of June 1984. Research will continue into processes of pollutant transport, removal and effects. In March 1985, as part of an intensive surveillance program using aircraft from several countries, the horizontal and vertical extent of pollutants will be studied.

Canadian Climate Centre

Responsibilities

The Canadian Climate Centre (CCC) provides the climate data, climate forecasts and information services necessary to improve the understanding of the effects on climate of increasing atmospheric pollutants, and the socio-economic impacts of such effects. The effects of climate variations are also studied.

The CCC is the lead agency for the Canadian Climate Program, a national program to coordinate climate-related activities in Canada.

Review 1983-84

Work on developing design climatologies for the offshore areas of the Canadian Arctic focussed on the Hudson Bay and High Arctic regions. As a necessary first step, an extensive comparison of surface winds determined from a wide variety of sources (including land-based stations, ships, gridded-surface pressure data) was undertaken. Literature on climatic change in Arctic Canada was examined and summarized to provide a perspective on the applicability of the existing data base for supplying long-term design information. Further development of software packages intended to facilitate analysis of offshore-related data was carried out.

A program to investigate the possibilities of examining and monitoring climatic change in the discontinuous and adjacent continuous permafrost zones was begun. A feasibility study for utilizing a network of ground temperature measuring stations and an analysis of reconstructed historical climate data from several locations in the discontinuous zone were carried out.

The regional climatology of Yukon was completed in draft version. Progress was made in developing the software package for analyzing high and low pressure system movements.

In cooperation with the National Research Council, a study was undertaken of sea-ice interaction around a small arctic island (Adams Island) to serve as an analog for the forces sea ice might impose on an offshore drilling structure. A mesoscale climate network for obtaining wind and temperature information in the 10-metre layer adjacent to the ice surface was designed and installed.

Plans 1984-85

Development work on offshore climatologies will continue, with emphasis on wind, wave and climatic change aspects.

Details of the permafrost monitoring program will be finalized and work on assembling and intergrating proxy data such as reconstructed historic data and tree-ring records, will continue.

The Yukon climatology will be completed and a user's handbook for the pressure system software package will be prepared. Some analysis of information generated by the latter package will be undertaken.

Participation in the NRC Adams Island study will continue for a second field season. Support to DND will be provided by supervising the development of characteristic atmospheric profiles over Canadian coastal areas, particularly in the Arctic. These profiles will be used by DND for assessing information from TEAL RUBY, a military surveillance satellite.

Administration Branch

The Administration Branch provides financial, material management, library and general administration services to AES headquarters elements, AES Regions and those organizations whose central elements interface with AES Headquarters.

Review 1983-84

Inspection visits were made to Resolute, Mould Bay, Eureka, Alert, Norman Wells, Inuvik, Sachs Harbour, Whitehorse, Churchill, Coral Harbour, and Baker Lake. Comprehensive health, safety and fire protection inspections were conducted at each site. Training sessions were given to staff while on site. Visits were made to Resolute, Mould Bay and Eureka, in January 1984, to assess the environmental and living conditions, from a health and safety point of view, during the dark period.

Plans 1984-85

Annual inspection visits will be made to the High Arctic Stations.

Field Services Directorate

Responsibilities

The Field Services Directorate (FSD) provides up-to-date weather information, public and marine forecasts, and warnings to most of the large communities in the North. Weather services and consultation are provided to major industries, such as transportation and resource exploration, as well as to environmental and regulatory agencies.FSD operates five data-gathering networks, automatic stations, satellite read-out stations, the Canadian Meteorological Centre (CMC) in Montreal, the Arctic Weather Centre (AWC) in Edmonton, the Yukon Weather Office

located at Whitehorse airport, several weather services offices such as in Inuvik and Frobisher Bay, three scientific support offices, and the Beaufort Weather and Ice Office (BWIO) at Tuktoyaktuk. A modern communications system relays information to and from weather stations across the North.

Review 1983-84

To mark the 35th anniversary of the establishment of the High Arctic Weather Stations (HAWS), commemorative plaques were presented at Eureka and Resolute in July 1983 and in Mould Bay in January 1984.

An antenna enabling reception of TV and FM stereo programs was installed at Mould Bay. At Alert, an extension was added to the Upper Air Operations office in October-November 1983 to provide environmentally-controlled space for aerological computer equipment known as ADRES. Renovations were made to similar facilities in January-February 1984 in Mould Bay and Coral Harbour. Western Region has implemented a back-up system between stations in the event of a problem with ADRES.

The HAWS and other AES isolated weather stations continued to serve as bases for scientific projects and field studies by providing the necessary support services for scientists and technicians. Services were provided to small groups at Alert, Clyde, Resolute and Sachs Harbour in 1983. Major projects were accommodated in Mould Bay and Eureka. RADARSAT (an international project comparing ice types and structure depicted in satellite imagery with ground truthing data) re-commenced on-site research at Mould Bay in March 1984.

AES conducted seismology and geomagnetic programs for Energy, Mines and Resources (EMR) and provided support to EMR staff at a number of Arctic Weather stations, such as Inuvik, Whitehorse, Baker Lake, Sachs Harbour, Alert, Frobisher Bay, and Mould Bay. AES continued to support DND's communications installation at Eureka, Polar Continental Shelf Project (PCSP) activities in the High Arctic, air quality and carbon dioxide monitoring at Mould Bay and Alert, an ozone program at Resolute and National Research Council's neutron monitor gamma-ray project at Alert. Appropriate weather support was also provided to expeditions, as necessary, including tourist flights to Northern Ellesmere Island and a trek to the Pole by a Finnish group in March-April 1984.

At Norman Wells, construction of the new Upper Air Operations Office is nearing completion. A plan has been submitted for a new fourplex and facilities refurbishment at Cambridge Bay, and for facilities refurbishment at Sachs Harbour. In October 1983, a new modular weather station was opened at the Pond Inlet airport. The 10-year old former office was vacated, allowing the community to expand. Some piles have recently been put into the ground for two new AES dwellings at Baker Lake. These houses will incorporate prefabricated polyurethane 'coldstream' panelling. Programmed renovations to all radiosonde tracking equipment continues. New 7-cell hydrogen gas generators for the upper air program have now been installed at all the HAWS, and new 5-cell generators have been installed at Sachs Harbour, Fort Nelson, Churchill, Hall Beach and Inoucdjouac. Over the new 2 years, 8 other Arctic stations will have new generators installed. A new hydrogen balloon inflation building was commissioned at Sachs Harbour.

Communications and computers are vital components of AES' weather services delivery system. In the fall of 1983, the conversion phase commenced from the CYBER to the new CRAY vector computer at the Canadian Meteorological Centre (CMC) in Montreal. Testing was completed and the new super computer was accepted in December 1983. In conjunction with the Department of Communications, CMC participated in a 6-month trial of transmitting weather and ice facsimile charts via satellite from Montreal to the Frobisher Bay Weather Office; and for 4 months, a satellite link was operated between Edmonton and Frobisher Bay. Both trials were successful. Digital facsimile transmission was introduced at the Arctic Weather Centre. A trial of meteorburst communications equipment was carried out in September 1983 between Sachs Harbour and Tuktoyaktuk. It appeared to be flexible, easy to operate and cost-effective. AES managers are continuing their efforts to improve communications in the North using the latest technology.

The current Work and Cost-Sharing Agreement between DOE/AES and DOT/CATA is under review in Central Region, Winnipeg. Discussions were held with USAF officials in the fall of 1983 regarding the American proposal to modernize the entire DEWLINE chain of radar sites. A tripartite agreement was signed by AES, DOT/CATA and the DND concerning the High Arctic Data Communications System which has been operating successfully in Northern Ellesmere Island since September 1982. Contracts for the provision of meteorological services and housekeeping services were re-negotiated with several native co-operatives and native people to maintain programs at Pond Inlet, Old Crow, and Cape Dorset. Contracts at Clyde and Sachs Harbour continue in effect. Extensions of the observing programs to 24 hours commenced in April 1984 at Clyde and Cape Dorset.

Meteorological information, forecasts and consultation services continued to be provided for a variety of programs and activities in the North. AES continued supporting Northwest Lands and Forests in the N.W.T. by providing weather information and forecasts specially tailored for the Forest Fire Suppression Program at Fort Smith and by supplying a meteorologist from Whitehorse as an instructor in the GNWT's training program. Discussions were held with the president of Northwest Territorial Air concerning aviation weather services. A terminal forecast verification program has been implemented at Whitehorse. In May 1983, AES commenced issuing a forecast bulletin for the City of Yellowknife. In mid-June 1983, weather information and forecasts were provided for the Northern Native Broadcasting program originating in Whitehorse. Weather offices at Inuvik, Resolute and Frobisher Bay continued to support domestic and international aviation activities with aviation weather services. The Arctic Aviation Treasury Board submission for Services North of 60°N was approved, and will result in implementation of improvements over the next five years. The Beaufort Weather and Ice Office operated for the 1983 drilling season providing meteorological services to Dome, Gulf and Esso from early June to December out of Tuktoyaktuk, and will re-open in June 1984. BWIO activities continued during the winter of 1983-84, with communications between AES' forecast centre in Edmonton and Dome's offices in Calgary.

Meteorological data were acquired from 49 synoptic weather stations and seven automatic stations. Data were also provided from 14 aerological stations. The climatological network comprises 104 locations in the territories which provide extreme daily temperatures, precipitation and other weather information. Non-standard meteorological data from PCSP's arctic bases have been retrieved and added to AES's data bank. A new automatic MAPS station was commissioned at Camsell River, N.W.T.; and the MARS II installation was removed at Radium, N.W.T. Reports were obtained from seven ships during the navigation season. A major upgrading of meteorological instrument areas occurred at Faro, Paulatuk, Fort Simpson, Cambridge Bay, Sachs Harbour, Tuktoyaktuk, and Pond Inlet.

Three more Arctic Aviation Weather Reporting Stations (AAWRS) were commissioned in 1983 at Beaver Creek in the Yukon, and at Fort Liard and Fort Norman, N.W.T. There are now 28 AAWRS operating in the territories - 7 in the Eastern Arctic, 6 in the Central Arctic, and 15 in the Western Arctic. Contracts to operate the meteorological programs and AAWRS with local Inuit co-operatives are still in force at Pond Inlet, Cape Dorset and Old Crow. The site was relocated at Paulatuk; new cabling was installed at Fort Resolution; a site was selected at Fort Franklin; and eight new Observer-Communicators were certified in the Eastern and Western Arctic. One Private Aviation Weather Reporting Station (PAWRS) continues to operate at Rae Point.

Six more buoys were deployed by the Department of National Defence in August 1983 over the frozen Arctic Ocean. Another buoy was placed on an ice island northwest of Ellesmere Island, where a research site may be established by EMR/PCSP. The Arctic Basin Buoy Program, launched in October 1981, makes data available internationally from the polar ocean by satellite communication.

Regional Scientific Services Division staff activities included preparing for and participating in public hearings on the Beaufort Sea in October 1983 in Resolute and Inuvik; completing and reporting on the study of the effects of artificial islands on landfast ice regimes in the Beaufort Sea; initiating an Arctic Wind Assessment project; reviewing a quarry proposal for the North Yukon slopes; monitoring Arctic haze and the effects of CO_2 on the Arctic environment; planning for surface water chemistry monitoring in the N.W.T.; involvement in the Mackenzie River Basin study on water quality and quantity; providing environmental response to GNWT's development policy; preparing a climatology of the Nahanni area for Parks Canada; reviewing an article on climatic variation in the boreal forest zone of the N.W.T.; supporting an air pollution study in the Yukon River Valley; and co-ordinating data collection from a mini-network in the Great Bear-Great Slave Lakes for an EMR study on water levels.

Plans 1984-85

Improvement of services to aviation north of 60° will include the preparation of terminal forecasts for about five sites in the Eastern Arctic; on-going staffing of Fort Reliance; location of another AES inspector at Whitehorse; initiation of transcribed weather broadcasts from Yellowknife, Whitehorse, Inuvik and Cambridge Bay aeradio stations; and the installation of APT satellite receiving antennae at Yellowknife and Inuvik. The observing program will be increased at Broughton Island, and an AAWRS will be established at Haines Junction. A meteorological information display screen will be installed in the Yellowknife Weather Office.

The Beaufort Weather and Ice Office (BWIO) will again operate at Tuktoyaktuk from June through to December 1984, and the CMC will provide long range consultation service. DND will deploy another 8 buoys as part of the Arctic Basin Buoy Program in 1984. One buoy will be deployed in northwestern Hudson Bay. Computer-based, real-time forecast models of pack ice movement, ice thickness, wind, waves and iceberg movement will be tested.

Studies will continue of the motion and frequency of icebergs in marine areas from Lancaster Sound to Davis Strait, using satellite navigation and radar. This information will be utilized in modelling and forecast technique development to enhance support to offshore activities. AES, in cooperation with COGLA, is involved in comparison tests of radars to detect icebergs; truthing will be provided by MOBIL Oil with funding from ESRF.

The construction of two houses at Baker lake and the upper air station at Norman Wells should be completed; as should the re-location into the new air terminal, of the Weather Office at Frobisher Bay. A facility will be installed in Frobisher Bay to receive routinely, facsimile charts via satellite. The saltwater desalination project will be tested at Eureka. Heat recovery/exchanger systems will be serviced in Mould Bay and Eureka. Incandescent runway lighting will be installed at the Mould Bay airstrip. A new personnel support and operations centre will be designed for Mould Bay. New hydrogen generators will be installed at Norman Wells and Coral Harbour.

AES will continue to provide forecasts for low-level weather conditions over the coastal waters between Baffin Island and Greenland to 68°N and up-to-date weather information, forecasts, warnings and scientific consultations for Arctic projects and activities, as well as climatological information for northern planning and development. Instruments, networks and communications systems will be inspected and maintained. Other special support services will be provided, on a cost-recovery basis, to assist agencies and expeditions in successfully completing their field project in the North.

Canadian Forestry Service

Pacific Forest Research Centre

Economic Function: Short Range Research

Review 1983-84

The program to develop renewable resource and forest management data for the Yukon Territory continued with the establishment of permanent plots to monitor the succession of vegetation on different site types following burns of different intensities. A vegetation survey was conducted on Southampton Island and Melville Peninsula NWT as part of the Land Use Information mapping program.

Seed certificate activities under OECD Seed Certification continued. Thirty four collection sites were certified and each of the seed lots tested for germination. Seed for export was valued at approximately $350,000.

The final report on the fire history and management study of Kluane National Park was delivered to Parks Canada. Knowledge gained from this study was used in the successful Dall Sheep habitat prescribed burn conducted near Kluane Lake. The Forest Insect & Disease Survey monitored forest pests and damage along the Alaska and Klondike highways. Populations will be reassessed in 1984 as they could pose a threat to adjacent stands.

Plans 1984-85

Data will continue to be collected for renewable resource and forest management purposes. Vegetation in the permanent plant succession plots will be reexamined and additional plots established. Forest productivity measurements will be obtained from selected ecoregions.

Consultation will be provided as required to Parks Canada for preparation of fire management plans for Kluane Park.

Advice will be provided to Yukon Lands and Forests regarding fire management planning, implementation of the 1984 edition of the Canadian Forest Fire Danger Rating System and other fire matters upon request. The annual survey of forest insects and diseases will be conducted and reported.

Northern Forest Research Centre

Review 1983-84

The large scale photography system developed at NoFRC received final modifications for operational use for regeneration assessment and other resource inventories in the Yukon and Northwest Territories. As required, input was provided to the federal environmental impact assessment of proposed northern projects. Studies of the effect of climatic variations on forest productivity was continued along two north-south transects. Field performance plantations established near Fort Smith in the early 1970's were assessed. A publication of the results is presently being reviewed. Forest insect and disease surveys were continued in the Fort Simpson area and along the Little Buffalo and Slave Rivers.

The Centre continued to serve as a member of the NWT Fire Management Program Committee. The experimental burn in the NWT scheduled for July 1983 was cancelled.

Plans 1984-85

Field trials will be conducted to test the Large Scale Photo Sampling System for regeneration assessment. Participation in the federal environmental impact review process will continue. Forest insect and disease surveys will be conducted in the NWT. The Centre will continue to participate in the NWT Fire Management Program Committee.

Inland Waters

National Hydrology Research Institute

The National Hydrology Research Institute, established in Ottawa April 1, 1979, carries out scientific studies of surface water, ground water, and snow and ice. These studies include both process and applied research as well as modification and development of instrumentation and technology for laboratory and field analysis.

Ground Water Division

Responsibilities

The Ground Water Division research programs emphasize the development of hydrological techniques, methodologies and instrumentation for ground water resource evaluation and ground water aspects of environmental impacts.

Review 1983-84

Additional field measurements were carried out and water samples collected for chemical and isotope analyses, in a number of groundwater discharge areas along the Dempster Highway between Klondike Crossing and Fort McPherson, and in the Snag Creek/Mirror Creek area on the Alaska Highway.

The 1982-83 time-lapse films were retrieved. Cameras, and a number of ice-level gauges, were again installed in the Burlap Creek icing area, (km 1817.5) on the Alaska Highway. The section across the icing area was resurveyed a number of times to determine ground movements.

The time-lapse camera installed in September 1982 to monitor a polynya[1] at the head of Cambridge fjord on Baffin Island wa retrieved in September 1983. Although bad weather obscured the point of interest on numerous occasions, the film has captured a useful record of the development of the polynya.

Development of the multi-channel data-recording system, designed to enable recording of progressive ground freezing, has reached the stage of field testing.

Plans 1984-85

Analysis and interpretation of field results and time-lapse photography from icing sites along the Alaska Highway will continue, as will interpretation of data on groundwater discharge areas.

A multi-channel data-recording system will be field tested during winter 1984-85.

[1] A polynya is a patch of open water in a sea ice field.

Surface Water Division

Responsibilities

In northern areas, the Surface Water Division conducts basic and applied research in the field of permafrost hydrology. It provides consultative services on northern water problems and carries out specific water-related studies both in support of the Inland Waters Directorate mandate and for other government agencies.

Review 1983-84

Observations of break-up on the Liard River below Nelson Forks, and the Mackenzie River above and below the Liard confluence were made in April and May 1983. In the Fort Simpson region, energy balance data were gathered to study the weakening of the river ice cover prior to break-up. The progression and timing of break-up was monitored. Ice jams were studied intensively. An analysis of historic maximum water levels in the Fort Simpson region was done. The results were included in a report on the 1983 break-up prepared for the Water Resources Division, DINA.

A "hot-wire" device designed to measure ice thickness without the necessity of drilling the ice cover was successfully field tested on the Ottawa River and in the Mackenzie Delta. Work continued on devising techniques to measure ice jam characteristics.

During April and May, water temperatures were measured on the Liard and Mackenzie Rivers near Fort Simpson, beneath the intact ice cover prior to break-up, and during the break-up period. Water velocity profiles were also obtained at a number of locations before break-up.

On the lower Mackenzie and in the Mackenzie Delta, observations of ice break-up were made to augment the existing data base and continue the Mackenzie ice regime study. The progress of break-up was studied during May and early June from Norman Wells to the Beaufort Sea.

An investigation of the water level regimes of a variety of lakes in the Mackenzie Delta continued to provide baseline information for the assessment of the potential impact of increased flow regulation that will result if dams are constructed on the Liard River. Time lapse photography of water levels at nine sites within three study areas was obtained from spring break-up until almost freeze-up (late April to September). Climatological data were collected at all study areas and investigation of water quality charcteristics was continued, commencing with ice core analysis in April. This information is intended to provide some indication as to whether or not the Delta is a pulse stablizing system. A report on the 1981 observations was completed, and analysis of 1982 and 1983 data has begun.

A study of the water balance of a "non-connected" lake in the Mackenzie Delta was begun in 1983. A research basin was selected, and instrumentation was installed. Initial measurements of groundwater conditions were carried out using the lake piezometers, and hydraulic conductivity of the bed material and groundwater outflow from the lake were estimated. Preliminary analysis of the individual components of the lake's water balance provided a rough estimate of the magnitudes to be expected.

A study to investigate the patterns and processes of channel changes in the Mackenzie Delta was begun in 1983. Seven bank erosion sites were selected, and two were outfitted for the acquisition of time lapse photography. Channel bathymetry, boundary materials and water velocity data were collected in order to clarify the processes of erosion, sediment transport and deposition. Through examination of aerial photography, it was possible to map the rates of channel migration, and a progress report on the first season's work was completed. A flow direction meter was also designed and successfully tested for use in this and related studies in the future.

East of the Mackenzie Delta, data were collected at three basin sites in the tagia zone south of Inuvik and at six basin sites in the tundra zone between Inuvik and Tuktoyatuk. Surveys of culvert ice accummlation, river icings, late winter snowpack water equivalent, discharge and meteorological elements were made at appropriate locations in the basins. Reports on the 1981 and 1982 field seasons were completed.

Research has been completed on observations of seasonal river channel and streambed temperatures, from sites on Caribou Creek and Rengleng River near Inuvik.

Plans 1984-85

A. Fort Simpson Region

Field investigations for ice jams on the Liard and Mackenzie Rivers near Fort Simpson will continue.

The refinement and evaluation of methods and instrumentation to monitor river ice will continue.

The study of the Liard River thermal regime will be continued.

Data will be analysed to determine
(a) heat flux from river water to the ice cover and
(b) total heat transfer by the Liard and Mackenzie Rivers.

B. Mackenzie Delta Region

Ice break-up along the lower Mackenzie River and throughout the Delta will be monitored by aerial photography, with emphasis on ice jam events.

Water levels in six delta lakes and three small channels will be monitored using staff gauges and automatic time-lapse camera systems. Snow survey and metorological data will be obtained, and water temperatures and samples will be taken during short visits throughout the ice-free season.

Field studies will continue, to assess the water balance of a small "non-connected" lake and its surrounding drainage basin in the Delta.

To study channel bank stability and erosion, time lapse photography will be employed to monitor two very active sites. Bank erosion at six sites will be assessed via erosion pins. Data will also be obtained on channel bathymetry, flow structure in channel bends, and sediment transport.

The Inuvik-Tuktoyaktuk Highway hydrology study will continue for one more year. Snow survey and meteorological data will be obtained at sites along the proposed route of the Inuvik-Tuktoyaktuk Highway and at one site along the Dempster Highway south of Inuvik. Water Survey of Canada personnel will be monitoring the discharge of four small rivers during the open water season (Boot, Cabin, Ryan and Hans Creeks).

Snow and Ice Division

Responsibilities
The Snow and Ice Division studies paleoglaciologic evidence for climate change and hydrologic processes in the North and their impact on northern development. It researches the mechanical and electrical properties of snow and ice, examines glaciers, mountain snowpacks, snow metamorphism and other aspects of alpine hydrology, and develops and maintains an inventory of perennial snow and ice in Canada.

Review 1983-84
In core related work, an area at the head of the Donjek Glacier (Yukon) was radar sounded and reflections obtained from a 1500 B.P. White River volcanic eruption at 450m depth. The analyses of the 103m Mount Logan core proceeds with assembly of data pertinent to the 1908 Tunguska meteorite event. Anion analyses indicate association with well-known volcanic events but no apparent trends that could be related to increasing global pollution levels. The time span of the core is now estimated to be 300 years. Spectral analysis of a 100 year oxygen isotope time series shows temperature correlations with meteorological records from Dawson, although there are some interesting anomalies, apparently related to the periodicities of astronomical phenomena. A tree-ring analysis of samples from the Saint Elias may help resolve some of the analytical difficulties.

Plans 1984-85
The ice cores obtained from Mount Logan in 1981 will continue to be analyzed for oxygen isotope, chemical, gross B-activity, total gas and carbon dioxide contents. Tabulation of glacier inventory data for the glaciers of the Yukon Territory will be completed.

Water Planning and Management Branch

Responsibilities
This Branch undertakes water resource studies as well as programs to reduce flood damage and improve water management, and advises the Northwest Territories and Yukon on water planning and management matters. The Branch participates in environmental assessments of development projects.

Review 1983-84
The $2.2 million Yukon River Basin study to assess resource development alternatives in the basin was drawing to a close. At an 8 and 9 March 1984 meeting in Whitehorse, the Study Committee undertook an extensive review of the proposed study recommendations and prepared directives for preparation of the final study report. The expiry date of the Agreement has been extended from December 31, 1983, to September 30, 1984.

Work is under way on a draft Enabling Agreement and subagreements for implementing some of the recommendations contained in the 1981 Mackenzie River Basin Study Report.

A 3-year extension to the Canada-Northwest Territories Flood Damage Reduction Agreement and Memorandum of Understanding has been requested in order to complete flood risk mapping in the Northwest Territories. As part of the extension, the list of places to be mapped is expected to be revised to include Fort Liard and Nahanni Butte. Negotiations for a Canada-Yukon Flood Damage Reduction Agreement are temporarily "on hold" at the request of the Yukon Government.

Plans 1984-85
To complete the Yukon River Basin study and report on resource development alternatives.

To draw up an Enabling Agreement for implementing some of the recommendations in the 1981 study report.

To continue to work toward effective flood damage reduction in the Territories.

Water Resources Branch

Responsibilities
The Water Resources Branch operates through two divisions, the Hydrology Division and the Water Survey of Canada Division. Across Canada there are eight Water Resources Branch regional establishments, six of which are located in Vancouver, Calgary, Regina, Winnipeg, Guelph and Dartmouth. The seventh office, established in 1980 is situated in Yellowknife, N.W.T., and the eighth in Longueil, Quebec. Water Resources Branch programs in the Yukon Territory are administered by the Vancouver Regional Office.

The responsibilities of the Water Resources Branch include collecting, processing, storing, analysing, interpreting and providing water quantity and sediment data for water resources management. The Branch also provides advice and assistance on various aspects of national water programs.

The Hydrology Division (Headquarters)

The Division conducts analytical and interpretive studies designed to support and complement the basic data collection activities of the Water Survey of Canada Division.

Water Survey of Canada Division (Headquarters and Regional)

Responsibilities
The Water Survey of Canada (WSC) Division (Headquarters) provide technical support to the Survey's Regional Offices. It develops techniques, instrumentation and standards for the collection, computation and publication of hydrometric data.

The Division maintains data banks, does network planning for hydrometric stations, conducts non-routine hydrometric field surveys, measures the discharge rates of rivers under unsteady flow conditions, measures sediment deposition in reservoirs, lakes and rivers, and carries out morphological surveys and studies on river channels, drainage basins and estuaries.

Review 1983-84
The first year of the five year Data Collection Platform (DCP) acquisition and installation program was completed. Of the 70 DCPs acquired by the Water Survey of Canada 20 were sent to Yellowknife for installation in the Northwest Territories and 5 to Vancouver for installation in the Yukon. Seventeen DCPs were installed at hydrometric sites in the territories, but eight did not provide data during the winter period due to insufficient capacity of the photovoltaic power supply systems. Solar panels have performed well and meet all specifications. An ECS/AES Data Communication committee was formed to review requirements and formulate a proposal for data communication. A report with recommendations will be tabled early in 1984.

Regional Activities

In the Yukon Territory, the WSC operated 70 hydrometric stations, and continued to contribute data and information to various studies under the three year $2.2 million Canada-British Columbia-Yukon planning agreement for the Yukon River Basin.

In the Northwest Territories, the WSC 137 operated hydrometric stations. Using data from DCP transmitted via satellite daily forecasts of water levels on the Mackenzie River were provided to various agencies including those dealing with navigation on the River.

The construction program included five new stations, two major reconstructions and a small storage building erected at Frobisher Bay.

Plans 1984-85

The acquisition and installation of DCPs will mark the second year of a five year program. Of the 70 DCPs to be acquired in 1984-85, 22 are scheduled for installation in the NWT and 5 in the Yukon. Efforts will continue to develop ECS/AES capability to receive and communicate DCP data.

A review of the history and sedimentary processes and environments on the Mackenzie Delta will be supported and a consultant study of the Mackenzie River sediment transport, source and channel morphology will begin. This short feasibility study could lead to more extensive field investigations.

The Water Survey of Canada, will continue to operate the hydrometric network in the Yukon and Northwest Territories and in the north of all provinces except in Quebec. Processing of surface water data will be done entirely in the north using computer services based in Yellowknife. Hydrometric calculations will be facilitated with the use of a PRO.-350 micro computer which processes data in-house and permits data users direct access to these data banks.

The Mackenzie River Delta network of 11 hydrometric stations will also be used to provide data for the calibration of a Delta flow distribution model.

Water Quality Branch

Responsibilities

The Water Quality Branch (WQB) collects, analyzes, interprets and disseminates water quality data. These data are obtained from hundreds of sampling sites across Canada, including the Yukon and Northwest Territories, augmented by detailed information collected in comprehensive surveys. The data serve a wide range of users including the Department of Indian & Northern Affairs (DINA) and the North West Territories Water Board (and its Technical Advisory Committee) as well as other agencies responsible for managing water resources, for preparing environmental impact analyses, for planning studies and for developing interjurisdictional agreements.

Operations in the Yukon are carried out by offices in Whitehorse and Vancouver. Operational logistics in the Northwest Territories are coordinated through offices in Yellowknife and Regina. All data are subject to a quality control program and are coded into the National Water Quality Data Bank (NAQUADAT).

Review 1983-84

Under the Yukon River Basin Study (YRBS) the Branch provides analytical support, assistance in network design and data interpretation. A report was prepared on the optimization of sampling frequency for a future monitoring program. This report was based on the analysis of one year's record from a network of stations in the basin. Routine water quality monitoring was started on the Teslin and Liard Rivers to determine long term trends in water quality due to land use developments.

In support of YRBS, a report was prepared on the dissolved oxygen (DO) levels under ice cover, based on field work carried out during 1982-83. During the winter months, significant depressions in dissolved oxygen relative to summer months were noted in the Nordenskiold and Takhimi Rivers. The report suggests that changes in levels of dissolved oxygen may be correlated with high organic carbon levels.

Other studies in support of YRSB include a report on the use of HYDROLAB 800, an automated water quality monitor, and a report on the use of hot boxes for protecting equipment from extremely low temperatures.

For the Northwest Territories, the results of an analysis for water quality characteristics and trend development are published as Volume 9 of the Mackenzie River Basin Study Report. The results were obtained using all Mackenzie River basin data, formerly published in 1981 under the Mackenzie River Basin Study Program.

A biophysical overview of the Hay River basin, including an assessment of existing water quality was completed under a cooperative arrangement with the Government of the NWT. This agreement calls for a number of biophysical overviews of interjurisdictional basins. Under another agreement with the NWT, mapping of water resources began. This represents an initial step toward developing a Strategy Paper outlining WQB activities for the next five years in the North.

Plans 1984-85

The monitoring station network is now at its planned complement of fixed stations, including the Keewatin sites, and a new station is to be added on the Liard River. This addition will broaden the water quality data base, facilitate long term trend assessment, and contribute to the understanding of river processes in northern Canada. During the 1984 break-up period, the runoff and the spring freshet will be extensively monitored at two locations in the Keewatin.

Mapping in the NWT will continue and overview reports on seven of the interjurisdictional basins will be undertaken in cooperation with the GNWT as part of the studies dealing with water quality aspects of the GNWT - DINA Land Use Planning Program.

The Branch will undertake an internal review of all WQB-Northern Program water quality management activities to determine the direction for future network design, monitoring strategies, and water quality planning activities, for the period 1985-1990.

The Branch will continue to cooperate with other services of Environment Canada and other agencies, in northern basin studies and other water quality management programs by providing analytical and interpretive support. In addition, a program report will be prepared by the Water Quality Work Group of the YRBS, summarizing the existing water quality information, and making recommendations for future studies.

Environmental Protection Service

Economic Function: Short Range Research

Responsibilities

EPS ensures that the federal government's environmental protection regulations are enforced. The Service controls air and water pollution, manages the disposal of waste, assesses and controls the environmental impact of pollutants and handles environmental emergencies. EPS provides departmental liaison with industry and provincial environmental protection agencies. District offices are located in Whitehorse and Yellowknife and provide the bases for northern operations.

Environmental Strategies Directorate

Responsibilities

The Environmental Protection Service ensures that sources of pollution at federal facilities are cleaned up and that new projects are environmentally acceptable. Pollution problems are identified and assessed and clean-ups developed in consultation with other federal departments. Environmental effects of new projects are assessed through a screening process.

In addition to carrying out work to minimize pollution at federal facilities, advice on the environmental effects of activities falling under federal jurisdiction is provided. EPS provides specific and indirect advice the later through guidelines and codes of good practice. In addition, EPS co-ordinates interdisciplinary reviews to assess the effects of federal activities on the environment. These reviews enable EPS to provide advice and assistance and recommend appropriate courses of action for governments, senior management and industry. The Program also implements the EPS role in the policy statement "DOE Role in EARP".

Review 1983-84

Yukon and Northwest Territories staff participated in reviewing the EIS for Hydrocarbon Development in the Beaufort Sea-Mackenzie Delta Region.

EPS Yukon represented the department on DIAND's Regional Environmental Review Committee (RERC) and coordinated the referral and review of material submitted to the Committee. Also EPS undertook a review of the material received from its own mandate perspective. The major activities related to the RERC involved potential development by Gulf Canada and Peter Kiewit Sons Ltd. on Yukon Slope.

EPS continued as a member of the Water Quality Working Group of the Yukon River Basin Committee. This multi-year study will end in July, 1984.

Sub-district offices were opened in Inuvik and Frobisher Bay. Liaison with other government departments, communities and the public was established in both areas.

EPS/NWT continued to provide support to the Arctic Waters Advisory Committee advising DIAND on the development of environmental operating conditions of offshore oil and gas operations.

Plans 1984-85

Activities in the Frobisher Bay and Inuvik sub-district offices will be expanded. EPS/NWT continue to provide support to the Arctic Waters Advisory Committee.

EPS will continue to provide a departmental focus on RERC as well as undertake its own review of development proposals submitted to DIAND and referred to RERC. An increased level of RERC/environmental assessment activity is expected.

Environmental Protection Programs Directorate (EPPD)

Responsibilities

EPPD ensures that an adequate information base to determine the status of environmental quality in Canada is identified and that appropriate environmental protection mechanisms are developed and implemented.

Main areas of technical activity are Commercial Chemicals, Waste Management, Industrial Programs and Technical Services.

Commercial Chemicals

Review 1983-84

EPS continued to chair a pesticide review committee to provide advice to the Yukon Government on a mosquito control program.

EPS Yukon collected abandoned capacitors containing PCB's[1] at two mines and continued its inventory of this contaminant.

EPS Yukon examined 45 samples of gasoline for lead content to test for compliance with Clean Air Act Regulations. A violation was due to poor handling practices by a service station operator. The operator was not prosecuted. EPS/NWT sampled gasoline from service stations and bulk plants in Norman Wells, Hay River, Fort Smith and Frobisher Bay.

Plans 1984-85

EPPD activity will continue to advise and comment on mosquito control programs. EPS will continue to encourage the Yukon Government to develop and administer pesticide control legislation.

EPS Yukon and NWT will continue the gasoline monitoring program.

Waste Management

Review 1983-84

EPS Yukon received a total of 12 pollution incident reports involving spills of oil or other hazardous materials. This number reflects a substantial drop compared to the last several years. EPS/NWT received a total of 118 spill reports and responded to selected potential major spills.

Enforcement under the pollution provisions of the Fisheries Act continued with two successful prosecutions: (1) Placer Development Limited for depositing diesel fuel into a small creek in the Howard's Pass area of Yukon; and (2) CanMar for spilling in Tuktoyaktuk Harbour, NWT. In addition, EPS/NWT laid two charges against Robinsons' Trucking Ltd. for diesel spills on winter roads.

Contingency planning was emphasized. Amendments and updates to the Yukon Disaster Committee Contingency Plan to Deal with Oil and Hazardous Chemical Spills were sent to plan holders. Northern Canada Power Commission completed and implemented a plan for its facilities in Whitehorse. Work began with the Yukon Transportation Association and petroleum handlers on the development of a cooperative oil spill response association to be set up in Whitehorse. EPS/NWT reviewed and

[1] PCB, Polychlorinated Biphenyls.

provided advice on Contingency Plans for Beaufort Sea, Norman Wells and mining operations.

Training of field staff from several government departments on the basics of responding to oil and hazardous chemical spills was carried out for the Environmental Protection Subcommittee of the Yukon Disaster Committee. A course entitled "Hazardous Materials in the NWT: Spill Prevention and Response" was developed, prepared and presented in Yellowknife and Fort Smith.

A study on the "Feasibility of Designating Ocean Dumpsites in the Canadian Beaufort Sea" was completed. A workshop on ocean dumpsite designation in the Beaufort Sea was held in Yellowknife in June. Agreement with NWTG was achieved on dumpsite designation criteria, research and monitoring requirements and the need to address potential land use conflicts and to engage in public consultation.

The Service continued to administer the provisions of the Ocean Dumping Control Act in the Yukon and NWT through Regional Ocean Dumping Advisory Committee (RODAC).

EPS Yukon inventoried and inspected 100 abandoned waste dumps throughout the Yukon in order to assess environmental hazards. No sites found are believed to present a hazard, but landfill operation at active sites needs improvement.

Plans 1984-85

EPS Yukon and NWT will continue to respond to oil and hazardous chemical spills. Support to the Yukon Disaster Committee, Environmental Protection Subcommittee will continue with annual updates/amendments to the committee's contingency plan. Agreements on interdepartmental and intergovernmental cooperation when dealing with spills will be updated or newly developed to ensure that a system of reporting, alerting and monitoring continues to operate through Yukon.

Prevention activities will continue with facility inspections to assess hazards and potential for spills and pursuit of a formal referral system with YTG Protective Services for proposed bulk fuel storage facilities.

EPS Yukon will promote the recycling of waste materials by providing an advisory service.

EPS/NWT will develop guidelines for hazardous waste storage and transfer facilities and develop criteria in support of ocean dumpsite designation in the Beaufort Sea and Eastern Arctic.

Industrial Programs

Review 1983-84

EPS continued work with DIAND and DFO to develop guidelines for Yukon placer mining.

Field programs to assess the impacts of mining activity on receiving waters were undertaken at two mine sites in the Yukon, one placer and one base metal, during 1983.

EPS continued its involvement with DIAND's Land Use Advisory Committee by providing specific advice on operating conditions for over 150 land use applications during 1983.

Activity related to Beaufort hydrocarbon development included collection of baseline inventory information along the Beaufort Coast and on the Yukon North Slope, regarding anticipated and identified development areas.

Energy Research & Development projects were begun in the areas of marine dredging in the Beaufort Sea, abandonment of artificial islands, waste management in the Beaufort Region and spill detection technology. Government/industry steering committees were established for each R&D subject. All 1983-84 reports were completed.

A data report on the 1982-83 government/industry Beaufort Sea shorebase monitoring program was completed and distributed. Data interpretation was begun and a progress report completed. An abbreviated field program was carried out during the 1983-84 field season.

Advice was provided to the Water Board through membership on the Technical Advisory Committee (TAC).

Reports on the impact of mines on freshwater environment was initiated for Yellowknife Bay and Back Bay (Great Slave Lake), Prairie Creek (Mackenzie mountains), abandoned gold mines and the Thompson-Lundmark mine.

A report entitled: "A Report on Legislation and Terms and Conditions Pertaining to Uranium Exploration in the Northwest Territories" was completed.

Woodsmoke pollution of a suburb of Whitehorse, Yukon, continues to be an urgent concern. Sampling during the winter of 1982-83 proved that the pollution can be expected on one day in three during the heating season. The particulate matter contains a high percentage of polyaromatic hydrocarbons (PAH) in respirable particle sizes.

Plans 1984-85

Activities in relation to placer mining will continue, as will cooperation with DIAND, DFO and industry to implement specific aspects of the proposed placer guidelines and to coordinate technological research.

Receiving-water monitoring projects will continue to ensure that guidelines and standards are effective.

Participation in DIAND's Land Use Advisory Committee will continue. Increased activity over 1983-84 is anticipated in response to improving economic conditions.

A control strategy for woodsmoke pollution will be initiated in collaboration with the Government of Yukon and civic authorities.

The Service will continue to collect baseline information in relation to water quality and biological conditions in the Beaufort Sea Area.

Fact sheets on selected development projects in the NWT will be prepared and distributed. In addition, pre-development sensitivity assessments at major development sites will be conducted.

EPS/NWT will develop a strategy and initiate field trials for environmental monitoring guidelines.

Technical Services

Review 1983-84
EPS Yukon maintains a station in Whitehorse to monitor carbon monoxide, nitrous oxides and particulate matter as part of the National Air Pollution Surveillance network. EPS/NWT operated two high volume sampling stations in Norman Wells and one high volume station in Yellowknife. A draft surveillance report on the Yellowknife area was completed. Preparations to expand the system to include stations in Inuvik and Frobisher Bay were begun.

A comprehensive stack test at the Giant Yellowknife Mine was carried out to assess compliance with proposed arsenic regulations drafted under the Clean Air Act and to refine methods development for stack testing of gold roasting processes. A report was completed and distributed.

Plans 1984-85
EPS Yukon and NWT will continue to monitor air quality as part of the NAPS network.

Lands Directorate

Economic Function: Short Range Research

Responsibilities
The Directorate conducts research, provides data and information on land characteristics and provides policy advice on nationally important land-use issues. To promote environmentally sound land planning and management, lands collects data, carries out research and plans programs in cooperation with other federal departments and agencies, thus ensuring that all programs comply with the guidelines of the Federal Policy on Land Use.

Land Resources and Data Systems Branch

Review 1983-84
The Land Use Monitoring Division continued its research on and production of the land Use Information Series maps of the Northwest Territories. The Division compiled, drafted and printed 24 maps (scale 1:250,000) for the South Victoria Island - Northeast Keewatin area of the Northwest Territories. Research and surveys for a map-sheet of the Melville Peninsula - Southampton Island area were completed.

The Land Use Information Series maps are now available for most of the mainland area of the Yukon and Northwest Territories. Combining a wide range of data on renewable resources and the activities associated with them, the maps present inforrnation on wildlife and fish habitat areas, native hunting and trapping areas, development areas, mineral resources, historical sites and ecological characteristics. They contain also information useful to land-use administrators, planners and communities. The mapping program is financed jointly by Environment Canada and Indian and Northern Affairs Canada. Several other federal agencies also participate.

In conjunction with the mapping program, a background report on aquatic resources of islands bordering the Viscount Melville Sound area was published.

Also in conjunction with the program, the Ecological Research and Integrated programs Division provided an ecological overview of the Melville Peninsula - Southampton Island region which included: ecodistrict map-unit boundaries; generalized descriptions of relief, landforms, geology, soils, vegetation and water features; climatic information and ecoregion descriptions; and a coastal classification.

Ecological baseline studies for the Mackenzie Mountains Region of the Yukon and Northwest Territories, the Lancaster Sound Region and for the adjoining Viscount Melville Sound Region were completed. The two latter studies also include data on the ice conditions, currents and wildlife of the marine environment.

Climatic ecoregions were delineated and described for the districts of Franklin and Keewatin. A Northern Wetland Study was completed for the Beaufort Sea Region and the Northwest Passage. Encompassing 19 maps (scale 1:500,000) it is accompanied by a report and fact sheets describing the distribution and nature of wetlands within an ecodistrict framework. Microcomputer software (LANDPLAN) was developed to facilitate land-use planning for the North.

Plans 1984-85
The Land Use Information Series maps of the Melville Peninsula - Southampton Island will be completed. Field research and map compilation will be carried out for maps in the South Baffin Island region. Several reports and northern perspective maps relating to various aspects of this program will be published. The agreement between Environment Canada and Indian and Northern Affairs Canada is expected to be extended to 1988 to complete mapping north of 60°. The Ecological Research and Integrated Programs Division will provide a general ecological overview and a coastal classification for the Northern Land Use Information Series maps. Area-specific environment guidelines will be produced for the Mackenzie Mountains Region of the Northwest Territories. For the Beaufort Sea Region, new biophysical data will be compiled for integration into the existing ecological data base. For this region, data gaps will be identified along with research needs, and area-specific environmental guidelines will be initiated. The Division will cooperate with the Government of the Northwest Territories, to map the ecosections of the Lake Harbour area of southern Baffin Island.

Pacific and Yukon Region

Review 1983-84
The Land Directorate's regional office completed ecodistrict maps and descriptions for the Mackenzie Mountains. Preliminary maps for the remainder of the southern Yukon, except the Dawson map-sheet, were completed. Advice and services regarding land resources and ecological land classification were provided to the Yukon government and other government agencies.

Plans 1984-85
None, due to termination of regional programs in this area.

Canadian Wildlife Service

The Canadian Wildlife Service (CWS) conducts research, manages and administers programs under the Migratory Birds Convention Act and the Canada Wildlife Act. The Service co-ordinates federal, provincial and territorial action on common wildlife problems. It carries out surveys, develops inventories of wildlife and does research on wildlife species and their habitats. Finally, it collects and analyzes data on the animal population and studies wildlife diseases and the effects of toxic chemicals on birds and animals.

Review 1983/84

Results of work related to caribou and polar bear, carried out under the CWS-DIAND-GNWT research agreement, is summarized below.

Caribou

The second of four parts of a five-year study on the effect of fire on the health, movements and distribution of the Beverly Herd of barren-ground caribou was successfully completed, with considerable support having been provided by the Fort Smith Hunters and Trapper's Association, NWT Wildlife Service and the Saskatchewan Department of Natural Resources. The study comprises three principal components:

(1) An assessment of the adequacy of the present winter range conducted by monitoring changes in condition indices (weight and fat stores) over the winter period with comparisons made to other herds in areas where the burn rate has been much lower over the past 15 years.

(2) Herd distribution and movement are monitored from October to May, and results are evaluated in terms of regional burn distributions and frequencies, local burns of various ages, sizes and types, terrain and cover types, and snow conditions.

(3) The winter ranges are evaluated in terms of the frequencies of cover types and their post-fire age as well as changes in the cover and the biomass of caribou forages at various after-fire intervals.

The main herd spent much of the winter of 1983-84 on the tundra and in the fringes of the forest. In November and December, it travelled from the eastern portions of the range to the western limits north of the east arm of Great Slave Lake and returned to the Artillery Lake-Sifton Lake region in February. Physical condition of individuals changed little from November to the end of March. Physical condition and pregnancy rates of that group were about average. The second group, which wintered in the forest in the Winchester Lake region, was found to be in excellent physical condition. Pregnancy rates were exceptional. Habitat studies included two months of field work in the Monscho Lake region in July and August of 1983.

Polar Bear

Long-term studies of the behaviour of polar bears in relation to seals and sea ice conditions and a study of the importance of polynyas to over-wintering marine mammals in the High Arctic were continued. Age determination of polar bears captured in the CWS programs and killed bears from some areas, was performed. The study of the reproductive ecology of female polar bears in northern Manitoba was continued. Several hundred polar bears have been tagged and data were and will continue to be collected on fidelity to maternity denning areas, age-specific reproductive parameters, and condition.

Migratory Birds

Whooping Cranes

The Canadian Wildlife Service carried out aerial surveys in 1983 to monitor cranes and nests in or near Wood Buffalo National Park (WBNP) and to collect eggs for the cooperative USA-Canada foster parent program. At least 24 nests were constructed, three of which were destroyed by predators. Nineteen eggs were collected from nests with clutches of two. Twenty-one were left for hatching by wild parents. At least 14 chicks were observed later in the summer in the Wood Buffalo population. Of 19 eggs collected, 18 with live embryos were flown to Gray's Lake National Wildlife Refuge in Idaho, as part of a cooperative USA-Canada foster parent management program. Sixteen were placed in nests of greater sandhill cranes and two were shipped to Patuxent Research Centre in Maryland. Eleven chicks, originated from the Wood Buffalo egg transplant, eventually fledged and migrated with their foster sandhill parents to the winter range in New Mexico.

Production in the wild Wood Buffalo population was not as successful. Of the 21 eggs remaining, 14 hatched, but only 7 young eventually migrated to the Aransas National Wildlife Refuge (ANWR). Causes of breeding grounds mortality were not determined, but predation is suspected.

As of January 1984, the world population of whooping cranes was 144. This population includes 107 wild and 37 captive individuals. The WBNP-ANWR population totalled 75.

Northern Development Impact Assessment

The fourth year of a five-year study of seabirds and their dependance on the ecological process of polynyas was successfully completed in the Cape Vera-Hellagate polynya area. The study included distribution surveys, food habits and availability, nesting success and process model development. The project will help to establish a bench mark for comparisons with other polynya areas, and will form a part of a broader seabirds population monitoring and ecology study of the eastern Arctic.

Monitoring of the industrial activities at McKinley Bay was continued to provide wildlife response data relating to pre-development activities in and around the Beaufort Sea.

Basic environmental data was collected for the Stokes Point-Phillips Bay area as part of the regional evaluation of the Beaufort Sea in relation to migratory birds. A study of previous exploration sites was also conducted, to assess the effects of those activities on birds and their habitats. Monitoring surveys of geese in relation to the Norman Walls development expansion were conducted cooperatively by Government and industry.

C.W.S. Western and Northern Region personnel were involved in the Beaufort Sea Development Review Panel through preparation of documents for, and provision of technical expertise to panel hearings. Staff continued to participate in several interagency committees.

A review of the key areas for migratory birds based on present knowledge, as well as the development of a draft concept management plan for Bylot Island Sanctuary, and of a draft public brochure on all Sanctuaries were carried out.

Parks Canada

National Parks Activities

Economic Function: Culture and Recreation

Responsibilities
The National Parks Branch is responsible for selecting and establishing new national parks in the various geographical and marine regions of northern Canada. The Prairie Regional Office (Winnipeg) manages the existing national parks.

Review 1983-84

New Park Studies

Parks Canada has identified "Natural Areas of Canadian Significance" (NACS) in each of the 15 natural terrestrial regions located mainly in the Territories. National park reserves have been established in four of these regions and in three areas, lands have been withdrawn for future national parks. Parks proposals have been presented to the public in four additional regions.

Northern Yukon

A national park in the western portion of the northern Yukon was included as part of the COPE Agreement, recently approved by Cabinet. The CYI Agreement-in-Principle provides for the involvement of the Old Crow Band in a national park over the northern part of the Old Crow Flats. Discussions have taken place to delineate the park boundary and legislation to amend the National Parks Act is in preparation.

Ellesmere Island

Lands were withdrawn in June, 1982 for national park purposes for a period of two years. Park planning and establishment principles have been incorporated into a paper which formed the basis for public consultation. A final agreement between Canada and the Government of the Northwest Territories has been drafted and is under discussion.

East Arm of Great Slave Lake

A non-renewable resource assessment has been carried out and a boundary proposal prepared. Public consultations on this proposal will be initiated this year.

North Baffin (Bylot Island/Eclipse Sound)

A natural resource study and a non-renewable resource study have been completed. Results will be used in the preparation of boundary options.

Plans 1984-1985
It is hoped that two new national parks, Northern Yukon and Ellesmere Island, will be created by the time of the celebration of Parks Canada's Centennial in 1985. Studies will be undertaken to identify park management guidelines.

Public consultations on the East Arm proposal will hopefully result in the establishment of that area as a national park in the near future.

Field assessments will be conducted during the summer of 1984 on north Banks Island, Wager Bay, and Southampton Island to identify boundary alternatives and to assess natural resources and non-renewable resource issues. Local communities have expressed interest in these projects. Parks Canada intends to meet with the communities to discuss these plans, opportunities for local involvement in new national parks, and the degree of support for these new park initiatives. A study of the marine environment of Eclipse Sound will be undertaken to improve the information base in support of the North Baffin proposal.

Field studies will be undertaken of the future Canadian landmark site of Nelson Head.

Canadian Heritage Rivers System

Review 1983-84
The Government of the Northwest Territories (GNWT) and the Yukon Territorial Government (YTG) have joined the Canadian Heritage Rivers System announced in January, 1984. Parks Canada in cooperation with DIAND and GNWT has carried out a system study of northern rivers in order to identify rivers in the Territories for possible heritage designation.

Plans 1984-85
Parks Canada plans to conduct, in cooperation with DIAND and the Territories, background studies of certain rivers for possible nominations to the Canadian Heritage Rivers System.

Kluane National Parks Reserve

Review 1983-84
Implementation began on the public transit system aimed at providing access to the Kaskawulsh Glacier in the Slims Valley. The low-grade road alignment was surveyed and out, geo-technical and environmental studies were continued, and trails and exhibits were designed. A tender call was issued to seek private operators who might be interested in developing and operating the transit system and support facilities.

A Park Conservation Plan detailing future resource management activities was completed.

Plans 1984-85
Work on the Kaskawulsh Access system will be continued. Environmental studies will be completed, low-grade road and trail construction will commence and exhibits will be fabricated. A suitable private operator and proposal will be sought to operate and develop the system.

Nahanni National Parks Reserve

Review 1983-84
The first stage of Nahanni Management Plan program was completed with a series of public meetings in selected Northern and Southern Canadian communities. Plan Alternatives were formulated and reviewed with the public in March/April 1984 to complete the second stage in the program.

An interpretive exhibit to be housed in the G.N.W.T.'s Blackstone Territorial Park on the Liard Highway adjacent to Nahanni was completed.

The Resource Description and Analysis component of the park's Natural Resource Management Process was completed.

Plans 1984-85
The final stage of the Nahanni Management Plan program will be completed with the preparation of the draft plan, a final round of public consultation and the preparation of a recommended plan for the Minister's signature.

Auyittuq National Park Reserve

Review 1983-84
The Park Data Plan component of the Natural Resources Management Process was completed.

Plans 1984-85
A research program to inventory the park's natural and cultural resources will be initiated.

Negotiations will be completed with the G.N.W.T. with respect to planning and sharing the costs of a joint Visitor Centre to be constructed in Pangnirtung commencing in 1985-86.

Wood Buffalo National Park

Review 1983-84
A recommended Management Plan was completed following an intensive three-year study and extensive public consultation. The plan was forwarded to the Minister of the Environment for approval.

Plans were completed for a new federal building in Fort Smith to house, amongst other uses, the park headquarters and visitor reception function.

Wood Buffalo National Park was designated a World Heritage Site by UNESCO in recognition of its outstanding natural values and significance to the heritage of mankind.

Plans 1984-85
The new park headquarters building in Fort Smith is expected to be opened in Fort Smith. A ceremony is planned in 1985 to officially proclaim Wood Buffalo as a World Heritage Site. Implementation of the park management plan will commence.

Historic Resource Theme Studies in the North

Studies are now underway to assist Parks Canada in identifying and selecting possible new national historic parks in the north.

Plans 1984-85:

(a) *Whaling in the Arctic*: the first phase of a research and planning study on Arctic Whaling has been reviewed and approved by the Historic Sites and Monuments Board. Cumberland Sound (Baffin Island) has been identified as a priority area for interpreting the whaling industry. During the summer of 1984 a site assessment group will be charged with evaluating candidate sites in Cumberland Sound as to their potential as national historic parks. This study will be completed in fiscal 1984-85 for review by the Historic Sites and Monuments Board.

(b) *Arctic Prehistory*: a similar thematic study has been initiated to identify important aspects of the prehistory of the Arctic.

Klondike National Historic Sites

Review 1983-84
A 10-year strategy for implementing the Klondike National Historic Sites plan was completed. Restoration work was undertaken on the Robert Service Cabin, stabilization of the BYN building (British Yukon Navigation Co.) was completed, restoration work on Winaut's Store continued and the restoration/rehabilitation of the St. Andrew's Manse was completed. The Manse will be used for staff housing.

A cleanup of the historic Government Reserve area was completed and a walking tour was initiated.

Parks Canada established a visitor information service in the reconstructed A.C. Co. Store (Alaska Commercial Co.), the Government of Yukon visitor reception centre in Dawson.

Plans 1984-85
Stabilization and concurrent archaeology and preliminary design work will commence for the restoration of the Dawson Daily News building.

Stabilization will be undertaken on the Custom's House and on Ruby's Place.

Preliminary design work will start on the S.S. Keno restoration and on the rehabilitation of the N.C. Warehourse (Northern Commerical Co.) as a future stores building.

Whitehorse National Historic Sites

Review 1983-84
Continued discussions with officials of B.C.'s Heritage Resource Branch reduced the area required for historic park purposes in the Northwest corner of the Province to 53 square miles. The land would be used to establish the Chilkoot Trail portion of the conceptual International Gold Rush Trail Historic Park, which stretches from the Alaska coast at Skagway and along the Yukon River to Dawson.

Plans 1984-85
An amended memorandum of agreement to acquire land and to establish a National Historic Park in the area of the Chilkoot Trail is expected to be signed during the summer of 1984. A management planning program for the park area will formally commence upon execution of the agreement.

External Affairs Canada

Economic Function: General Government Services

The Department of External Affairs' activities in the North involve the operations of foreign governments and their agencies. The Department advises on matters having foreign policy implications, maintains a coordinating and operational role in matters of international law and policy relating to the Arctic, identifies and exploits specific trade opportunities and negotiates agreements with other countries which may propose activities in the North. Within the Department, a number of bureaux handle different aspects of Arctic matters.

The Energy Transport and Science Bureau through its Energy and Environment Division, coordinates departmental interests concerning Arctic energy and environment and facilitates contact and cooperation between the Canadian government departments and agencies concerned with these matters and their foreign counterparts. The Bureau closely monitors issues which impact on energy development projects in the Arctic and coordinates activities related to the foreign policy implications and the international trade development aspects of these projects. The Bureau is also concerned with Canadian involvement in environmental issues affecting the north which have international implications.

The Legal Affairs Bureau is responsible for securing international recognition of Canadian sovereignty in the Arctic and for ensuring that all activities and programs in the Canadian Arctic either reinforce or, at least, are not inconsistent with Canadian sovereignty over the waters as well as the islands of the Arctic Archipelago. As part of this task, the Director of the Legal Operations Division chairs the Interdepartmental Panel on Arctic Waters. The Branch, in consultation with departments and agencies having specific responsibility for surveillance of coastal waters and for enforcement activities, is concerned with passage of vessels through Canada's arctic waters and, specifically, with the actions undertaken by Canada to protect the arctic marine environment.

The Bureau of European Affairs, which is responsible for the coordination of relations with the Nordic countries and the USSR, handles many of the exchanges and activities between Canada and these countries on issues related to the North. The Bureau heads the Circumpolar Affairs Panel created in April 1979, to promote greater coordination within the Department of northern foreign policy questions. Canada and the USSR are engaged in negotiations relating to a bilateral program of exchanges on questions concerning the Arctic.

The Bureau of United States Affairs coordinates Canada-United States relations in the Arctic, including matters having to do with science, technology, communications, energy, environment, and transportation questions (including the Northern Gas Pipeline), particularly along the 1,000 km Alaska/Yukon border. The Bureau is concerned with a series of northern environmental questions such as transboundary pollution, migratory birds and wildlife, bilateral cooperation in creating and managing parks and historic sites, designating and managing wild rivers, and management of transboundary rivers. In transportation, it has been responsible for the coordination of foreign policy aspects of such subjects as the reconstruction of the Haines-Alaska Road (Shakwak Project), and the White Pass and Yukon Railway.

The Bureau of International Security Policy and Arms Control Affairs provides liaison between foreign governments and various Canadian government departments, principally the Department of National Defence, in matters relating to the protection of Canada's security and sovereignty in the Arctic. Most significant in this regard is the coordinating role the Bureau plays in the evolution of Canada-American cooperation in the Arctic for the common defence of North America, including the Distant Early Warning Line of the North American air defence system.

The office of the Chief of Protocol, acting jointly with the Department of Indian Affairs and Northern Development, organizes an annual tour of the arctic for approximately 20 heads of diplomatic missions accredited to Canada.

The Cultural and Public Information Bureau provides foreign audiences with a variety of material on the North through its diplomatic missions. This material is in the form of articles for publication in post periodicals and in the foreign press, information kits, ministerial press releases and publications. The Branch also assembles or has produced photographs, videotapes and policy documents on Northern Matters for use in post media and public relations programs abroad. This material is designed to inform foreign governments, journalists and the public as well as to keep Canadian personnel working abroad abreast of developments in Canada.

Through its Trade Fair Program, the Department assisted Arctic producers to exhibit products and artifacts at several European trade fairs. The Trade Missions Program sponsored several mining and mining exploration delegations.

The Cultural and Public Relations Bureau is also responsible for exhibitions of Canadian art travelling abroad. These include two collections of Eskimo prints from the department's permanent collection and "Inuit Retrospective", belonging to the National Museum of Man. Its Cultural Affairs Division-Arts Promotion, after concluding in 1983 an arrangement with the Department of Indian and Northern Affairs, is now circulating abroad the latter's collection of Inuit and Indian art work.

To assist people contemplating travel abroad, the Passport Bureau makes passport application forms together with detailed instructions available at post offices, regional offices of other federal departments and agencies and travel agencies. The application form lists the eighteen Passport Offices in Canada.

Departmental information services are provided to the two territories.

Federal Environmental Assessment Review

Economic Function: General Government Services[1]

Responsibilities

A federal Environmental Assessment and Review Process (EARP) was established by Cabinet in 1973 to assess the environmental consequences of federal projects and to have these findings applied in plans, decisions, and actions.

EARP covers projects initiated or sponsored by Federal departments and agencies that need federal funds or involve federal property. All federal departments and agencies are subject to the process, except proprietary Crown corporations and certain regulatory agencies that are invited to participate.

EARP is administered by the Federal Environmental Assessment Review Office (FEARO). Its Executive Chairman reports to the Minister of the Environment.

Under the process, departments and agencies screen proposed projects for potential adverse effects. If the effects are not apparent, a more detailed examination known as an initial assessment is made. FEARO encourages organizations to seek public response in the early stage of planning any activities that may be environmentally sensitive. If either the screening or the assessment indicates potential significant effects, the project is referred to FEARO for a formal review. Each project is reviewed by an independent panel appointed by the Minister of the Environment.

A panel reviewing a project publishes guidelines for the environmental impact statement (EIS) to be prepared by the organization planning the project. As part of its review, the panel holds public meetings and subsequently submits a report to the Minister. The report describes the major potential impacts, draws conclusions and makes recommendations. Decisions on the panel's recommendations are made by the Minister of the Environment and the Minister of the initiating or sponsoring department.

Review 1983-84

Release of the final guidelines for preparation of the environmental impact statement (EIS) on the proposed Slave River hydroelectric project was postponed in June by the federal environmental assessment panel conducting the review. The postponement was to allow co-ordination of federal review activities with those of Alberta, so there will be as little duplication of effort and inconvenience to the public as possible.

The panel was appointed to review the potential environmental and directly related socio-economic impacts of the proposal, because these could occur in Wood Buffalo National Park which straddles the border between Alberta and Northwest Territories.

The Beaufort Sea assessment panel held a series of public meetings between September 14 and December 16 as part of its review of the proposal for production and transportation of Beaufort Sea hydrocarbons.

Informal and non-technical meetings were held in 20 northern communities. More formal and detailed meetings were held in Resolute, Inuvik, Whitehorse, Yellowknife, Calgary and Ottawa. This review saw for the first time the funding of participants as a pilot project. An independent committee allocated funds to twenty-two community, six native, and two conservation groups. FEARO is conducting an evaluation of funding effectiveness in achieving ends such as improved research by the groups and capability to participate in panel meetings.

Plans 1984-85

The Slave River panel is expected to release interim EIS guidelines in an information requirements document to be issued jointly with Alberta in April, 1984. The Beaufort panel will present its report to the Minister of the Environment early in the year.

[1] While FEARO's activities are classed as "General Government Services" expenses are not reported in ANEP. Funding is derived from administration program funds of the Department of the Environment.

Fisheries and Oceans

Responsibilities
The department is responsible for fisheries research and management throughout the Canadian north, drawing its authority from several acts, including the Fisheries Act. The department also implements oceanographic and hydrographic programs and coordinates ocean policies and programs of the federal government.

Fisheries Management

Economic Function: Short Range Research

Four DFO regions (Pacific (Yukon), Western (NWT), Quebec (eastern Arctic and northern Quebec), Newfoundland (Labrador Sea and Davis and Hudson Straits) carry out fisheries management and research. Fishery Officers in the territories carry out enforcement and inspection programs, and to a limited extent management functions. Professional assistance for fisheries and fish habitat management is provided by regional headquarters in Vancouver, Winnipeg, Quebec and St. John's Policy development input is provided by departmental headquarters in Ottawa. The Freshwater Institute in Winnipeg, the Arctic Biological Station at Ste-Anne-de-Bellevue, Quebec, and the Northwest Atlantic Fisheries Centre at St. John's, Newfoundland all carry out arctic research activities.

Resource Research Branch (Headquarters)

Responsibilities
The Branch provides a national focus for policy development and coordination with respect to resource assessment and related fisheries research activities in the Arctic and other areas of Canada. The Branch provides departmental representation on interdepartmental committees concerned with northern issues.

Review 1983-84
Resource Research Branch staff participated in activities concerned with the Beaufort Sea Environmental Assessment Panel, the Department of Indian Affairs and Northern Development's Land Use Planning and Conservation Policy and the Arctic Pilot Project. The Branch maintains interest in the development of the Energy Research and Development funding, Transport Research and Development and the Economic Development Agreement with the N.W.T. Specific areas of involvement are as follows:

- Represented DFO in reference to the Convention on International Trade in Endangered Species (CITES) and chaired the Subcommittee on Fish and Marine Mammals of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

- Attended DIAND workshop on development of conservation policy for the North.

- Compiled the annual cetacean report.

- Provided input to Parks Canada's Marine Parks draft policy.

- Participated with Ocean Science and Surveys in developing a revised submission for the Northern Oil and Gas Action Plan (NOGAP) and part in the development of departmental initiatives dealing with marine environmental issues.

- Attended meetings of the World Wildlife Fund (Canada) Whales Beneath the Ice Project. Critical habitat studies on beluga and bowhead whales, population studies on beluga, narwhal and bowhead whales and communication studies on narwhal were funded.

Plans 1984-85
An active role is planned in the coordination of Arctic fisheries and habitat research programs throughout the Arctic and in providing scientific input to develop departmental perceptions, roles and strategies for conservation of Arctic resources. Input will be provided toward the development of Arctic marine parks and DIAND's land use planning and conservation policies. The Branch will maintain contact in all aspects of ongoing research or other interests in the North, having a direct relation to the fisheries resource, such as the Arctic Pilot Project vessel traffic studies and the Beaufort Sea Environmental Impact Study.

Fish Habitat Management Branch (Headquarters)

Economic Function: Economic Development - Other

Responsibilities
The Branch provides planning and program support and advice to departmental senior management in Ottawa and the regions on all northern fish habitat management related policies, programs and issues. The Branch participates in policy development with respect to fish habitat management and protection in the Arctic and provides headquarters representation on a number of interdepartmental committees concerned with northern development and environmental protection.

Review 1983-84
Fish Habitat Management Branch staff participated in activities associated with the Beaufort Sea Environmental Assessment Panel, including the preparation of DFO's final position paper and coordination of its participation at the public hearings. Work continued on input to DIAND's Northern Land Use Planning initiative and the arrangements necessary for implementation of the Land Use Planning process. Staff were also involved in coordinating input to the Northern Conservation Task Force and continued to provide policy advice to DIAND on offshore developments through the Interdepartmental Environmental Review Committee (IERC).

The report and recommendations arising from the public review of proposed Yukon placer mining guidelines were reviewed and consultations were held with DIAND and DOE to determine an appropriate regulatory regime.

Plans 1984-85
Work will continue on the Beaufort Sea Environmental Assessment with a review of the Panel's report and recommendations

Panarctic's proposed Bent Horn Project and Consolidated Magnorth Oakwood's Lancaster Sound proposal will be reviewed. Work will continue on implementation of the Land Use Planning program. The Branch will assist with the development of regulations to control effluent quality and other aspects of placer mining, vis à vis the protection of fish and fish habitat. Staff will also participate in the development of the Plan for the Mackenzie River Basin and in the Northern Regulatory Review being conducted by DIAND.

Arctic and Native Affairs Branch (Headquarters)

Economic Function: General Government Services[1]

Responsibilities
The Branch formed in 1982 provides a departmental focal point for policy development, program coordination and advice on all native-related issues which impinge on the department's mandate. Branch personnel function as departmental representatives on government teams established to negotiate the settlement of native comprehensive land claims. In 1984 its area of responsibility was expanded and its title changed to include arctic operations within Pacific and Freshwater Fisheries, as Native issues through the settlement and implementation of claims will influence fisheries management policies and programs in northern Canada in the future. Thus advice and recommendations on arctic issues are now provided for senior management by the Branch.

Review 1983-84
Staff represented DFO interests on negotiating teams working on the finalization of the Agreement-in-Principle with the Council for Yukon Indians (CYI), and the completion of the Final Agreement with the Committee for Original Peoples' Entitlement (COPE). Input was made to the government's position on a Wildlife Agreement-in-Principle with the Inuit Tapirisat of Canada (ITC), and a representative provided for the negotiating team for the Dene-Métis claim which got underway early in 1984. The branch was the departmental focus for input to the Constitutional Conference on native rights in March, 1983 and March, 1984.

Plans 1984-85
Work on land claims is expected to peak as the Dene/Métis comprehensive land claim negotiations gather momentum and those with the CYI, and ITC progress towards final agreements. Negotiations on the Labrador Inuit claim will likely being in 1984 upon ratification of the COPE Final Agreement. The branch will continue to play a lead role in the ongoing process of native rights clarification that resulted from the Constitutional Conferences in 1983 and 1984.

Western Region
Fisheries Management, Northern Territories

Field Services

Responsibilities
Field Services in the Northwest Territories is responsible for enforcement of regulations, inventory of the harvest and local implementation of management programs. Fisheries officers enforce the **Fisheries Act** and attendant regulations. Area biologists are responsible for collection of data on resource exploitation at the local level.

Review 1983-84
Education and enforcement activities attempted to foster the conservation ethic and to reduce waste with respect to the hunting of whales. Similar efforts were directed in the area of fish and marine mammal habitat disruption. Staff continued to participate in inter-departmental resource use and allocation committees.

Plans 1984-85
Field Services staff from Inuvik to Frobisher Bay will continue to implement existing programs of direct enforcement where required and preventative enforcement in all areas. Emphasis will again be placed on working with fishermen and marine mammal hunters to reduce waste of the resources caused by poor fishing and hunting practices and improper handling of the catch.

Maintenance of harvest levels of narwhal within existing quotas will also be a priority in problem areas. Hunters and trappers associations in most areas are becoming increasingly conscious of problems - which arose in the past - and are gradually assuming more direct responsibility in the allocation of narwhal tags in an effective manner. A concerted effort to improve and accelerate conservation education programs, as well as to improve the collection of accurate harvest data will be made.

The restricted entry policy for the Great Slave Lake commercial fishery will continue, as will discussions with fishermen to develop and improve the current management plan. Monitoring of the Great Slave Lake commercial fishery will continue. Plant sampling in each administrative area, will include collection of whitefish and determination of length, weight and age will be made three times per year. The Buffalo River inconnu fishery will be monitored, as will the domestic fishery for inconnu at Buffalo Lake.

The Arctic char fisheries of the Cambridge Bay area will be sampled by collected of specimens from the packing plant at Cambridge Bay. Walleye fisheries on Kakisa and Thathlina lakes will be monitored. Subsistence fishery harvest data will be gathered where possible. It is anticipated that at least partial surveys will be conducted at Hay River, Fort Resolution and Dettah Village.

A creel census and biological sampling of the Kakisa River sport fishery is planned and stocked lakes (e.g. Polar, Upper Cabin and Sandy) will be monitored for angler success. The catch will be sampled to determine various biological parameters.

The walrus hunt near Igloolik will be monitored by staff from Frobisher Bay. Collection of at least 30 sets of samples and measurements will be taken. The catch from commercial fisheries in the Rankin Inlet area will be sampled. Test netting in the Sylvia Grinnell River will be done to ascertain the size and age characteristics of the Arctic char entering that river.

[1] Note that because of its nature this activity is shown under Economic Function "General Government Services". However funding is provided under the Economic Function "Short Range Research".

Arctic Resource Assessment

Economic Function: Short Range Research

Responsibilities

The Arctic Resource Assessment section is responsible for field surveys, stock and habitat assessment, and monitoring programs which enable the department to review effectively environmental impact statements. It also develops and implements management rationale for fish and marine mammal resources in NWT.

Review 1983-84

Fish and Marine Mammal Management

Assessment studies for lake trout stocks in the inland Keewatin Lakes and for Arctic char stocks on Victoria Islands were completed. A fish weir in the Rat river (Western arctic) was used to enumerate and tag the Arctic char upstream run. The lake whitefish stock identity and migration study in Great Slave Lake was continued. Monitoring of the effort and harvest of the sport fisheries took place in stocked lakes in the vicinity of Hay River and Yellowknife, Kakisa River, and the Inuvik area, for commercial fisheries on Great Slave Lake, walleye fisheries in Kakisa and Thathlina lakes and char fisheries in the Cambridge Bay and Rankin Inlet areas. An assessment of Pacific herring stocks in the Tuktoyaktuk area and an equipment trapnet study on Great Slave Lake continued. In addition, the Test Fishery Program on Baffin Island, in conjunction with the N.W.T. Wildlife Service, was extended. Pilot creel census studies, expanded to include economic evaluation of sport fisheries, were undertaken in several locations in the Northwest Territories.

The beluga hunt in the Mackenzie Delta was monitored with an expanded biological sampling program to assess the age, size and maturity of animals hunted. Other beluga studies included the aerial and land census of the animals in Cumberland Sound and Clearwater Fiord during August, and monitoring of the hunt here and in the Keewatin communities of Whale Cove and Eskimo Point. Biological sampling was part of the overall study.

Aerial surveys, to estimate stock size and summer distribution of narwhal, were conducted in the Lancaster Sound area (Eclipse Sound and Admiralty Inlet) and the Repulse Bay and N. Foxe Basin areas. In addition, the native hunt was monitored for catch/effort, and biological sampling continued. The third year of a five-year study of walrus in N. Foxe Basin concentrated on monitoring the hunt in the Igloolik and Hall Beach areas and biological sampling of the hunted animals.

DFO continued to participated in the Keewatin and Baffin Region harvest studies.

Resource Impact Investigations

The migrations of anadromous coregonids was monitored by means of radio tags and echo-location equipment. Emphasis was placed on the Mackenzie Delta and in the area of the Ramparts Rapids on the Mackenzie River. In the Tuktoyaktuk area, the program to describe the physical and chemical characteristics of Tuktoyaktuk Harbour and its importance as fish habitat was completed. A program to document the effects of river crossing construction on aquatic resources was initiated as part of DFO's Norman Wells Pipeline monitoring efforts. Under the Department of Indian and Northern Affairs' Arctic Land Use Mapping project, contract staff gathered, updated and compiled information on the fish and marine mammal resources of Wager Bay, Southampton Island and Melville Peninsula.

Plans 1984-85

Resource Impact

Work will continue to obtain information on the aquatic resources of the area and the effects of current and proposed industrial activity on these resources.

A study of fisheries resources located along the Yukon North Slope will be done. Surveys of the area between Phillips Bay and Roland Bay will be undertaken to determine the timing and extent of migrations along the coast. The utilization of coastal lagoons and freshwater habitats by anadromous and resident species will be investigated. This assessment will include an intensive biological survey of Stokes Lagoon.

Little is known about the population concentrations and habitat requirements of marine and anadromous fish in the Beaufort Sea. A multi-year program to identify areas of significance to marine and estuarine fish on the Mackenzie Shelf from Demaraction Point to Cape Bathurst will begin.

Other studies include the determination of baseline concentrations of heavy metals in clams (*Mya*) and seaweed (*Fucus*) in relation to sediment concentration from locations near Igloolik and Cape Hatt. The sampling began in 1983 and data are currently being analyzed so that a report can be generated in 1984. Samples of marine biota and sediments in the vicinity of the Nanisivik and Polaris base metal mines will also be taken in 1984.

Under the Norman Wells Pipeline Monitoring Program, initiated in 1983, midwinter sampling will be conducted at three sites. Early summer and late fall sampling will provide a full year of preconstruction data from all sampling locations. In 1985, midwinter sampling will coincide with pipe laying operations. The Arctic Land Use Research program (Northern Land Use Information Study), which began in 1983, will concentrate studies on southern Baffin Island.

Fish and Marine Mammal Management

Programs to be undertaken in 1984-85 include continuing investigation of sports and commercial fisheries on Great Slave Lake, to determine the current values of the lake trout harvest and catch/effort at each of the sport fishing lodges; to determine the biological population structure of lake trout and lake whitefish within the lake; and, to obtain estimates of sustainable yields for trout and whitefish to determine commercial quotas and to develop a rational basis for allocation between the sport and/or commercial fisheries. The program will include creel census and sampling at each of the sport fishing lodges, sampling of the commercial catch at plant locations, as well as tagging and sampling whitefish and lake trout from other areas of the lake and the collection of harvest statistics from the domestic fishery.

The commercial char catch from various systems in the Cambridge Bay area will continue to be sampled in conjunction with Field Services Branch. The study will also include taking samples from the commercial catch at the processing plant in Cambridge Bay and the operation of an experimental weir on the Jayco River in Albert Edward Bay. In the Rankin Inlet area, a creel census of the char sport fishery on the Diana River will be undertaken as well as a survey of the domestic char fishery.

In the Mackenzie Delta, a fish weir will be operated on the Rat River to enumerate the upstream migration of char, to assess the potential for a small commercial fishery.

In the Beaufort Sea area, samples will be taken from the domestic beluga hunt and analyzed for biological parameters such as age structure of the catch and stomach content. In addition, a small scale aerial survey will be undertaken to test the applicability of using photographic techniques in the estuary.

Studies of narwhal in the Arctic Bay area will continue. Aerial surveys of three summer concentration areas will be made and samples will be taken from the domestic hunt. This work will be done in conjunction with World Wildlife Fund studies and those being undertaken by the Arctic Management Research Section. Aerial surveys of narwhal will also be done by the Field Services Section in the Repulse Bay and Frozen Strait area in July. Monitoring of the domestic hunt and field observation of distribution and behaviour of whales during mid-July through September will be done concurrently.

The Southeast Baffin beluga study will continue and will include monitoring of the domestic hunt and biological sampling of whales landed in the Clearwater Fiord area. An observation camp will be erected and staffed on the cliffs above Millut Bay (Clearwater Fiord) to monitor the movements, distribution and abundance of beluga in the area from mid-August until the end of September.

Assistance will be provided to the Field Services Section to continue monitoring the walrus hunt in the Igloolik-Foxe Basin area. Samples will be taken from the domestic catch and analyzed for various biological parameters, such as age structure, genetic homogeneity and heavy metal load.

Arctic Management Research

Responsibilities

This section conducts research on fish and marine mammal populations of the Canadian arctic and their habitat requirements, so that sound decisions on the management and protection of these populations can be made.

Review 1983-84

Studies on population ecology and productivity of selected marine mammals started in the 1983 field season. Studies on stock identification and separation were continued and intensified as sample collections increased. Similar studies on arctic freshwater and anadromous fishes continued.

Plans 1984-85

Studies falling under two broad programs: Arctic Marine Mammal and Fish Population Biology and Arctic Marine Ecosystem Dynamics will be done.

Investigations of the genetic characteristics of various arctic marine mammal and fish populations will continue in order to develop biochemical techniques for stock separation. In particular, samples will be obtained from the Great Slave Lake whitefish population, broad whitefish in the lower Mackenzie River - Beaufort Sea area and from several species of marine mammals from various locales.

A study of the productivity of various species of marine mammals will continue and will include a study of marine mammal ageing techniques. Odontocetes (beluga and narwhal) from the domestic catch in the Beaufort Sea, Western Hudson Bay, Cumberland Sound, and Jones Sound will be sampled to evaluate possible causal factors to relate biotic and abiotic factors to reproductive success. A similar study of pinniped reproductive performance will be conducted to determine possible biotic and abiotic contributing factors. Walrus will be sampled by Field Services personnel in the Igloolik area. Harp seals will be collected in the Lancaster Sound area. A bearded seal study area has yet to be selected.

A study of various aspects of marine mammal biochemistry, nutrition and metabolism will begin. Tissue samples from individual animals will be taken throughout the year to determine nutritional status with respect to seasonal, physiological and reproductive cycles.

A study to elucidate various aspects of behavioural ecology of ringed seals will be continued. Data will be used to develop a population model and to predict or evaluate the effects of vessel noise and ice-breaking in fast ice habitat. The studies will be undertaken in conjunction with personnel from the Arctic Biological Station.

Section personnel will act as scientific authorities for a University of Manitoba study funded by the World Wildlie Fund's Whales Under Ice program. This study will document and verify ecological and behaviour characteristics of narwhal and beluga in the Lancaster Sound area.

A study to determine abundance, distribution and disturbance state of marine mammals through the application of airborne and/or satellite remote sensing techniques, underwater vocalization detection and localization and active sonar methodology will be initiated in 1984. These investigations will be funded through the National Energy Program.

Arctic Marine Ecosystem Dynamics projects are being undertaken at a number of locations throughout the NWT both in freshwater and in marine situations. The long-term research project at Saqvaqjuac near Chesterfield Inlet is phasing down. Results of the previous five years of study will be published. Summary results will be published in Inuktitut.

Division personnel will initiate a multifaceted study in the Resolute area. The International Biological Program's camp at Char Lake has been refurbished and will be occupied in March 1984. Studies will include primary production under ice cover and in open water. The productivity of marine amphipods will be investigated. A study to describe and quantify key aspects of the productivity of arctic marine fishes will begin at Resolute.

The long-term study of ecological factors and energy flow influencing an Arctic char population on the Kent Peninsula will continue. A study to examine migration to feeding areas, migration patterns, food utilization and productivity of Arctic char will be initiated in the Wellington Bay, Victoria Island area. Fish will be tagged with acoustic tags, observed using sonar, and sampled in feeding areas.

The long-term experimental cropping of whitefish from lakes in the Chitty Lake area will continue, and will involve regular sampling and the start of a new exploitation regime.

Fish Habitat Research

Responsibilities
The section conducts research on the mechanisms and processes in ecological cycles and the structure and function of freshwater and estuarine aquatic habitats in the arctic.

Review 1983-84
Expeditions to Saqvaqjuac continued research on the geochemistry and radiochemistry of the estuary. Detailed sampling of elements of the food chain improved estimates of uranium-series nuclide bioconcentration in this arctic estuary. A study of primary production and plankton biology in the large northern lakes (Great Slave, Great Bear, Athabasca, Reindeer, and Winnipeg) was begun in order to develop an index of fish productivity.

Plans 1984-85
Research will continue in uranium series radionuclide studies in Saqvaqjuac lakes, streams, estuaries and food chains to improve the information base on the fate of radionuclides from mine and reactor wastes in arctic aquatic ecosystems.

Economics and Marketing Services

Review 1983-84
DFO and the government of the Northwest Territories established two task forces. The first, which also includes representatives from the Department of Indian and Northern Affairs, is reviewing resource management goals for the fishery on Great Bear Lake. The objective is to assess existing resource allocation mechanisms and make recommendations to provide for the future management of domestic, commercial and recreational fisheries.

The second task force, which includes representatives of the Freshwater Fish Marketing Corporation, is reviewing the commercial fishery on Great Slave Lake to identify options for rationalizing the harvesting, packing and lake transportation operations of the fishery.

A pilot program designed to provide DFO with an alternative cost-effective approach to collecting catch and effort information on the recreational fishery at remote access fishing lodges was implemented. Two methods involving angler and industry participation in data collection were tested at three sites in the Territories.

Plans 1984-85
The study of licensing systems in the Great Slave Lake commercial fishery, in abeyance in 1983, will be continued. The long term objective of the study is to provide for quasi-property right in what now is a common property fishery.

The pilot recreational data collection program will be operated for a second season. Based on cost effectiveness and data accuracy, the desirability of applying the data collection methods to the balance of the lodge industry will be assessed.

Inspection, Fisheries Assistance and Development (Southern Operations)

Responsibilities
In the N.W.T. the Department monitors fish handling and processing facilities as well as commercial fishing, processing and distribution systems to ensure conformity with regulatory requirements. Field and laboratory inspections ensure that fishery products are acceptable for market. DFO provides assistance to fishermen through vessel upgrading subsidies and vessel insurance. Technological assistance is provided to industry through development of new equipment and products and through modified fishing and handling methods. The Small Craft Harbours program develops and maintains facilities for use by commercial fishermen.

Review 1983-84
In addition to maintaining existing regulatory, assistance and Small Craft Harbours programs, the Department expanded the Quality Improvement Program to complete certification of all commercial fishing vessels and began surveys of landing sites to compile a data base of construction and operational compliances. A development project involving an automated winter fishing shed was again tested and demonstrated on Great Slave Lake. The Beaufort Sea Herring roe test fishery was set up to investigate the possibility of producing a marketable volume of salted roe product. Selective summer fishing methods were tested. The Saputit weir fishery project was repeated on the Jayco River and a trap net fishery was carried out in selected sport fishing areas on Great Slave Lake.

Plans 1984-85
Southern Operations will continue to monitor fish handling and processing facilities and attendant distribution systems to ensure conformance to regulatory requirements under the Fish Inspection Act and complete the certification of all commercial fishing vessels. The surveys of landing sites to compile a data base of construction and operational compliances will continue.

Technological assistance will be provided to industry through development of new equipment and products and through modified fishing and handling methods. Examples in the NWT are the Beaufort Sea Herring Roe Fishery Project and the trial trap net fishery for whitefish in the east arm of Great Slave Lake. These projects will be undertaken in cooperation with the Fish and Marine Mammal Management Division.

Quebec Region

Economic Function: Short Range Research

Arctic Biological Station, Ste-Anne-de-Bellevue, Qué.

Responsibilities
To conduct research in Arctic Canada, especially Northern Québec, that will increase understanding of the ecological relationships, behaviour and population dynamics of marine and anadromous fishes and marine mammals, and enable the department to provide sound advice on possible yields of exploited and potentially exploitable species; also to conduct research that will increase understanding of the biological processess involved in marine and estuarine ecosystems and enable the department to provide advice on the potential effects of the development of oil, gas and mineral resources, and hydroelectric power.

Review 1983-84

Further studies of the fast-ice habitat of ringed and bearded seals were carried out in Amundsen Gulf and Prince of Wales Strait in April and May. Radio telemetry and temperature sensors were used to document the activity of ringed seals in their under-snow lairs.

A fourth year of behavioural research on white whales was conducted at Cunningham Inlet, northern Somerset Island, from July until the end of August; emphasis was placed on further documenting filial and group associations. In June and July an attempt was made to isolate sounds from offshore groups by recording from the floe edge in Lancaster Sound. Aircraft and other logistic support for both projects were supplied by the Polar Continental Shelf Project.

Marine mammal work was begun in northern Quebec in early June. Several communities harvesting white whales were visited, and a number of Inuit hunters were trained to collect information and specimens of marine mammals. Two Inuit field assistants worked with field parties throughout the summer.

A field party was placed at the Nastapoka River to study the harvesting, behaviour and movements of white whales in eastern Hudson Bay.

A special effort was made to observe and sample in detail the hunting of white whales in the Hudson Strait communities of Kangiqsuijuak (Wakeham Bay) and Quaqtaq (Koartac) during the late summer and fall months.

Frobisher Bay, southeastern Baffin Island, was again the major field site for biological oceanographic studies. Additional work was carried out at Cape Hatt, northern Baffin Island and in southeastern Hudson Bay.

Microbiological studies included work on bacterial production in conjunction with comparable measurements on other levels of the system in Frobisher Bay, and on the effects of oil on bacteria in association with other oil-related studies at Cape Hatt. Studies on detrital fall-out were continued in Frobisher Bay, using specially designed traps.

Studies on photosynthesis in phytoplankton and seaweeds continued in Frobisher Bay. Both plant groups were found to be much lower in lipid content than was expected from available information on cold-water forms. Ice flora and plants from below the ice taken in the area of the Great Whale River plume in southeastern Hudson Bay were studied to show the effects of the seasonlly varying river plume. Ice fauna and the under-ice zooplankton were treated as part of the same study. The development of the fresh-water plume under the sea ice of the bay was found to exert considerable influence on the kind and quantity of fauna present. Physiological investigations on macrozooplankton were continued in Frobisher Bay. A distinct seasonal trend in metabolic rates of Ctenophora (comb jellies) which are among the major zooplankton predators, was demonstrated. This appears to be related to food availability and not to seasonal temperature variations. Population levels seem to remain quite stable through the year.

Plans 1984-85

Work on ringed seals to be carried out in Barrow Strait will seek to relate the effect of variability in quantity and quality of fast ice to changes in ringed seal populations. The microclimate and activity budgets of seals in their under-the-snow lairs will be studied in the period February to May. Seals will be caught and instrumented with radio tags to provide ground controls for aerial surveys to be conducted in June. A sample of seals will be collected and examined to provide data on age structure, reproductive status and body condition.

Photographic surveys and tape recordings will be made at Cunningham Inlet along the floe edge to document the behaviour of white whales entering Barrow Strait. Routine behavioural observations of white whale congregations will be conducted from mid-June to mid-August.

The white whale studies initiated in 1983 will continue in eastern Hudson Bay; behavioural observations and sampling of Inuit harvested whales will be undertaken at the Nastapoka River, and a mobile party will concentrate on collecting specimens from the Inuit hunting in Richmond Gulf. A further study of white whales will be carried out at Kangiqsuijuaq (Wakeham Bay) and Quaqtuq (Koartac) in southern Hudson Strait.

Regular collections of ringed seals, bearded seals and walruses from several Hudson Strait communities will begin in conjunction with an Inuit harvest study, as part of a new management program.

In August 1984 a behaviour project on bearded seals inhabiting northern Amundsen Gulf will begin in conjunction with a marine ecology camp to be set up by the Renewable Resources Training program of the NWT government at Walker Bay, western Victoria Island. This study will provide much needed information on the summer vocal activities of the bearded seal and seek to define and quantify the local benthic resources on which they depend.

The arctic near-shore ecology study in Frobisher Bay will be continued as the principal effort of the biological oceanography program. Activities will include additional work on the ecology of the under-ice biota, on fallout of nutrient materials to the zoobenthos, on growth and photosynethetic production of phytoplankton and seaweeds, on the ecology, biochemistry and energetics of the mainly carnivorous zooplankton, and on the feeding of herbivorous and carnivorous zooplankton species. Additional marine ecology studies are planned for other areas for short-term consideration of such matters as the under-ice biota and the effects of oil on bacteria.

Newfoundland Region

Economic Function: Short Range Research

Fisheries Research

Responsibilities

Emphasis is given to the planning and implementation of research cruises to eastern arctic waters with particular interest in major commercial fish species (cod, shrimp, Greenland halibut, roundnose grenadier) off eastern Baffin Island and in Davis Strait on behalf of Canadian-based fisheries. Other species studied include harp and hooded seals. Additional attention has focused on the West Greenland salmon fishery. Research interests represent northward extensions of projects originating along the Newfoundland/Labrador coasts.

Review 1983-84

Data collected on arctic cod (Davis Strait to Grand Banks) since 1959 were analysed. A primary publication on stock discrimination of arctic cod is in preparation.

Preliminary analyses have been completed of morphometric data on Greenland halibut (stock discrimination). Long-term efforts have been mounted to prepare an adequate analytical assessment of the "total" NW Atlantic stock.

An analysis has been completed of 1982 shrimp research survey data from eastern Hudson Strait and Ungava Bay. Fishable biomass in Hudson Strait was estimated at 3,000 t. A very low biomass of 450 t was estimated for Ungava Bay. Biological data indicated that a possible 2-year reproduction cycle for females might be balanced by the high fecundity observed.

Catch rates, distribution and catch composition of shrimp in Division OA were monitored through the observer program. Data from the 1982 shrimp fishery were presented to the Northwest Atlantic Fisheries Organization (NAFO) along with the updated 1981 data. Information was compared to that presented from other countries in an overall assessment of the resource.

In March, 1983, over 9,000 harp seal pups were tagged in two major whelping concentrations off northeastern Nfld. A sample of over 800 pups was double-tagged to investigate tag loss. Further studies undertaken included those on size-dependent pup mortality; age composition of the commercial data; harp seal diets; female condition and pup growth rates; seasonal and annual variation in age structure of harp seal catches; and tag return survey. An aerial survey of hooded seals was carried out in northeastern Newfoundland in March, 1983. Only partial non-synoptic photographic coverage of the whelping patch was achieved and no ground-truthing was accomplished due to field logistics problems. Reproductive parameters of female hooded seals (based on ovaries collected in 1979) have been analyzed. Further achievements in 1983 include: a collaborative review of hooded seal biology and population dynamics; estimations from morphometric data of weaning period and pup growth rates; estimates of pup population of hooded seals from sealing vessel data 1977-82; and tagging of 825 hooded seal pups in March, 1983.

Research continued on the effects of marine fisheries on all Canadian Atlantic salmon stocks, with investigations extending to salmon feeding areas in West Greenland. A total of 2,153 salmon were sampled at the fish plant in Holsteinborg and 1,888 at Godthaab in centimeter length groups, including detailed measurements of fork length, gutted weight and scales.

Canadian observers participated in 21 shrimp and 18 Greenland halibut commercial fishing trips (Canada, Faroes, USSR, Denmark) in 1983. A total of 572 fishing days observed resulted in more than 250,000 length measurements and other biological information.

Plans 1984-85

Shrimp, harp seal, hooded seal, salmon and arctic cod research will be continued. Hooded seal research will be expanded to provide estimates of pup production in Davis Strait. In collaboration with Danish scientists, further efforts will be made to determine the vital parameters of hooded seals hunted at West Greenland.

Fisheries Management, Yukon Territory

Responsibilities

DFO is responsible for supervising all river and lake systems in the Yukon and northern B.C., with the direction of commercial, domestic and sport fisheries the major management concern. Habitat protection revolves around mining and proposed hydro dams. A major responsibility is the management of all freshwater species, including domestic fishing by non-natives. In addition, the District is involved in joint U.S./Canada management activities for transboundary river systems, power line proposals, Indian food fishing, mining, road construction, logging, seismic operations, and Beaufort Sea developments.

Review 1983-84

The second year of the two-year Yukon River Basin Study involved seven field programs throughout the territory, carried out with the assistance of 52 temporary staff. Salmon studies were primarily aimed at the enumeration and collection of biological data with respect to the individual species in both the Alsek and Yukon drainages. Other continuing programs investigated lake productivity, inventoried fish species and studied growth statistics and harvest levels in selected lakes.

In 1983, the Yukon River commercial salmon fishery netted record catches of 13,027 chinook and 25,990 chum salmon. These figures were substantially greater than the previous ten-year averages of 4,800 chinook and 5,800 chum salmon.

In an attempt to obtain estimates of salmon populations, escapements, distribution, migration behaviour and timing, a tagging program was undertaken in conjunction with the Yukon River Basin Study. Using fishwheels located near the Yukon-Alaskan border, 1,266 chinook and 3,176 chum salmon were tagged and released. Of these, 315 tagged chinook and 665 tagged chum were recaptured in the Dawson area fishery.

In the most extensive radio telemetry program ever conducted on chinook salmon, 130 radio tags were applied to study migrational timing, distribution and behaviour. Forty-six radio-tagged chinook were tracked into the upper Yukon drainage over a period of about two months and distances in excess of 1000 km. Two radio-tagged and five spaghetti-tagged chinook migrated to the Whitehorse fishway where a total of 905 chinook were counted through the fishway. Approximately 13,000 tourists visited the viewing chambers in the fishway in 1983.

An enumeration weir enabled quantification of the total return to the Klukshu River. Counts of 2,500 chinook, 20,500 sockeye, and 300 coho indicated below average to average returns for these species. Approximately, 1,600 salmon were sampled for age, size and sex composition.

Several lake studies were conducted in conjunction with the Yukon River Basin Study, including fish species inventories on 18 lakes and creel census on three lakes.

Most lakes were found to have similar species composition. Lake trout and whitefish respectively comprised 36.2% and 41.4% of the overall composition by weight. A conservative management policy was recommended for lake trout in which annual harvest levels reflecting individual lake productivity and species composition would be established.

Although the stocking of pothole lakes was not conducted this year, results of last year's stocking appeared to be very favourable. Catches was especially good on most lakes, with some fish exceeding a weight of one kilogram by fall.

Placer mining continued as the leading fisheries habitat issue in the Yukon. The department contributed to the development of guidelines for the placer mining industry. The new guidelines classify streams according to species production. Stronger constraints are needed for those streams having salmon and trout and lesser for grayling.

Plans 1984-85

Minimal field activities are anticipated in 1984. Greater emphasis will be placed on the analysis of data collected in post programs and on report writing. It is hoped that the pothole lake stocking program will be continued in 1984-85. The final policy and regulations for commercial sport fishing lodges is expected to be finalized by mid-summer.

Ocean Science Surveys

Economic Function: Long Range Research

Ocean Science and Surveys (OSS) conducts northern activities from three regional establishments: Atlantic Region, at the Bedford Institute of Oceanography (BIO), Dartmouth, N.S.; Québec Region (Champlain Centre for Marine Science and Surveys), at the Gare Maritime, Québec City; and Pacific Region at the Institute of Ocean Sciences (IOS), Sidney, B.C. Two operational programs, hydrography (the Canadian Hydrographic Service) and oceanography, are carried out in the north. Headquarters, in Ottawa coordinates the overall programs and performs the line functions of chart production and Marine Environmental Data Service. Northern work is done in collaboration with other government departments, universities in Canada and abroad, and with the private sector.

OSS Headquarters

Review 1983-84

OSS continued to provide the secretariat for the Canadian Committee on Oceanography (CCO) Panel on Ice, and represented the Department on the Environmental Studies Revolving Fund Steering Committee. The Ocean Science Affairs Branch participation in the work of a member of interdepartmental committees and groups; continued to develop program proposals for arctic oceanography and participated in the management of the Adams Island and Ice Deformation Project.

Plans 1984-85

OSS HQ will continue its participation in those committees and panels which demand its expertise. Work will continue on the Ocean Information Systems and the Ocean Climate Program and on the possible elaboration of joint Arctic endeavors with the Federal Republic of Germany, Japan, France, the U.S.A. and the U.S.S.R. OSAB will continue to supply the Scientific Authority for the Joint NRC/DFO/AES Adams Island Ice Deformation Study.

The Marine Environmental Data Services will continue to process and store chemical and physical oceanographic data and to provide data and information on request. The Wave Climate Study will continue to support drilling activities in the Beaufort Sea. A satellite wave measurement system will be deployed in support of the Gulf Tarsuit Island Removal Program.

The Scientific Information and Publications Branch will continue to publish validated scientific results of Departmental R&D Programs in the North.

Pacific Region OSS (Institute of Ocean Sciences)

Review of 1983-84

Ocean Physics Division

The Division worked towards describing and understanding those physical processes which accomplish the transport and diffusion of water properties within the upper 1000 m of the ocean in the Arctic and across the ocean-ice and ocean-atmosphere interfaces. The channels between the islands in the Canadian Arctic archipelago and portions of the continental shelf which border on the Arctic Ocean and the Beaufort Sea were studied. Some work was also carried out in the deeper waters of the Arctic Ocean overlying the Alpha Ridge.

Interpretation of the early winter hydrographic data from the Beaufort Sea in 1979 was completed with the publication of a journal article and a technical report. Principal findings were a haline circulation on the Mackenzie Shelf and Slope driven by wintertime freezing, a systematic modification of Atlantic water temperatures near the circulation in this area.

The second year of field data were collected providing water level, structure and current velocity information in and adjacent to the Northwest Passage.

A program of water height measurement along the Canadian Arctic continental shelf was continued in cooperation with the Tidal and Current Surveys of the Canadian Hydrographic Service. Water pressure gauges were replaced at Mould Bay, Isaacsen, Audhild Bay and Pond Inlet to supplement existing permanent gauge sites and so to provide a record of pressure changes from the Beaufort Sea to the north coast of Ellesmere Island and across the archipelago.

Analysis of data acquired north and east of Spitsbergen in the spring of 1981 was completed.

In the spring of 1983 OSS took advantage of the establishment of the CESAR camp over the Alpha Ridge in the Arctic Ocean and CTD surveys were run northward from the coast of Ellesmere and Axel Heiberg Islands out to the CESAR camp with an additional section joining them at the CESAR latitude running from the Makarov Basin to the Canada Basin.

The OERD Ice/Ocean Dynamics Program began in 1983. The goal of this program is to improve understanding of the dynamics of the momentum transfer between the ocean and pack ice in ice-covered waters, and of those aspects of the dynamical oceanography of the Beaufort Sea pertinent to the short-term prediction of sea-ice motion in this area.

A computer-based study of thermal diffusion in sea-ice covers was undertaken to investigate the observational requirements for the determination of vertical heat fluxes in sea-ice from ice temperature measurements.

Under contract work from Environment Canada, numerical models of the southern Beaufort Sea and Kugmallit Bay were used to predict the surge levels likely to occur at Tuktoyaktuk in the event of a "100-year" design storm. Conclusions drawn suggested that the sea would flood most of the township within a few hours of storm onset, considerable property damage would occur and lives could be lost unless an adequate surge warning service is installed.

Ocean Information

Four additional Arctic catalogue titles were added to the oceanographic data set series. Emphasis continued on the appraisal of the quality of data sets. This has contributed to the establishment of data archiving priorities in conjunction with MEDS and has resulted in the highest quality Beaufort Sea physical and chemical marine data being archived in the GE-3 format.

Other reviews and analyses completed or near completion in 1983 included: A Comparison of Natural and Petroleum Resource Development Related Fluxes of Metals, Hydrocarbons and Nitrogen, Phosphorus and Silicon to the Beaufort Sea; and Weather, Ice and Sea Conditions Relative to Arctic Marine Transportation (jointly with AES).

A detailed technical review of both the Beaufort Sea EIS and its Supplement was completed and Ocean Information Division made substantial contributions to the EARP public hearings at Inuvik and to the DFO position paper. Reviews of several major initiatives - a CMO proposal to drill for oil in Lancaster Sound, proposed port development at King Point and Stokes Point, and the Beaufort Sea Environmental Monitoring Project (BEMP) - were completed on behalf of DIAND.

Plans 1984-85

The Frozen Sea Research Group of OSS's Institute of Ocean Sciences, (IOS) will continue extensive oceanographic programs in the Northwest Passage. All programs described in May, 1983 were completed as planned except the studies identified for NOGAP funding. IOS personnel will take over the long-term monitoring of physical oceanographic information in Barrow Strait from the Bayfield Laboratory of Marine Science and Surveys. Studies will include monitoring of channel flow separation in the Barrow Strait-Wellington Channel area. A Conductivity-Temperature-Density (CTD) survey will be undertaken in Barrow Strait between 90°W long to 100°W long. Flow over the Barrow Sill will be monitored and boundary conditions monitored to develop a single layer barotropic model.

IOS will continue to monitor long-term flow through the Arctic Archipelago and conditions forcing that flow. Current meter and CT moorings will be placed of the northwest coasts of Prince Patrick and Banks islands for a period of one year. Frozen Sea Research Group and Canadian Hydrographic Service will conduct a joint program to study long-term nontidal water level fluctuations across the Arctic continental shelf. Water level gauges will be installed at Pond Inlet, Nansen Sound, Mould Bay and Isachsen. These data will be supplemented by data from permanent gauges at Tuktoyaktuk, Cape Perry, Coppermine, Cambridge Bay, Spence Bay and in Spitzbergen.

A current meter and CT mooring will be placed in the Herschel Canyon. Data will be supplemented with CTD profiles.

Should OERD funding under the National Energy Program be secured, a study of ice motion and formation in the Beaufort Sea will begin. The study will examine processes at the ice-ocean interface with the objective of improving ice movement forecasting models. Initial work for 1984 will consist of examining the sensitivity of existing models with indepth studies to be undertaken in 1985.

Atlantic Region OSS (Bedford Institute of Oceanography)

Review 1983-84

(a) Physical Oceanography

The Marginal Ice Zone Experiment (MIZEX) is a multi-national program to study atmosphere-ice-ocean interaction in the marginal ice zone between the open ocean and the interior of the pack ice. Of particular interest to the Atlantic Oceanographic Laboratory (AOL) are the physical processes affecting the advance and retreat of the ice edge as they relate to sea ice problems along Labrador and Grand Banks. As part of the MIZEX program, an array of satellite tracked drifters were deployed in the marginal ice zone to measure strain rates and deformation within the pack ice and investigate sea ice response to atmospheric and oceanographic forcing. These data, combined with small scale deformation studies, will be used in developing dynamic-thermodynamic sea ice models for the marginal ice zone appropriate for regions such as the Labrador Sea.

The wind stresses on broken pack ice at the margin is believed to be at least twice as large as that on either the open ocean or on closed pack ice, for the same wind. A shipboard "dissipation" measurement and analysis system was developed and tested and will be deployed during the 1984 experiment.

Preliminary analysis and editing of sea ice data along the Labrador Coast for the period 1963-78 was completed under contract in May 1983. This AES data set includes total ice concentration, concentration of ice types (new ice, grey, grey white, first year and second year), ice edge presence and orientation, and percent of open water on a 30 x 30 n. mile grid.

It has been found that, for a given month, the year to year variability in sea ice extent is correlated with atmospheric temperature, reflecting the importance of thermodynamic processes in this region. Within a given season, the variability in sea ice extent at a given latitude is affected by surface wind stress and longshore advection. Results of these analyses will be used to review sea ice models of the Labrador Sea.

The large-scale circulation of the Labrador Sea and adjacent waters of Baffin Bay, are being studied by means of a diagnostic numerical model, in over to better understand the steady state and, in the future, the time dependent processes such as storms, deep convection, and the annual runoff cycle.

A project to study the circulation of the upper water column in Baffin Bay, funded by the Northern Oil and Gas Activities Program (NOGAP) began. Historical oceanographic data in Baffin Bay were assembled re-formatted into standard BIO CTD/CM format. AOL undertook a modest field program in the summer of 1983 using equipment purchased under NOGAP funding. Four satellite-tracked drifting buoys were launched in August and tracked throughout 1983. Three current meter moorings with eleven instruments were deployed in northern Baffin Bay in September with recovery scheduled for the late summer of 1984.

The third consecutive field survey in the longterm monitoring program of ocean properties and transport in Barrow Strait, initiated in March, 1981, by the Bayfield Laboratory (Burlington, Ontario) was successfully completed in the spring (March-April 1983) in cooperation with MEL.

The ice-cover thickness was one meter thicker than usually experienced in the area and resulted in a deeper and saltier surface layer. The salinity and temperature profile data plus the short term current meter arrays (4 week period) of 1983 will be compared to those of 1982 to study the variation of transport between the two years and the effect of the extreme cold weather of 1983 on the circulation.

Two protype gyroscopically oriented profiling systems (G-UMPs) were successfully used to obtain simultaneous time series data on vertical structure in the temperature, salinity and flow fields. This on-going development is designed to provide necessary physical information for ecological studies.

Studies to test whether remotely sensed imagery can be used to supplement estimates of primary productivity in polar waters are continuing. Successful use of satellites in this area will eventually allow mapping of surface biomass in areas of interest, particularly those difficult to access by ship.

Satellite coverage of the high Arctic was made during July and August by CZCS sensor and data recorded at NASA Goddard, Washington. After preprocessing, the data will be shipped directly to BIO. During the Hudson '83 Arctic cruise, atmospheric and in water optical measurements, as well as water quality analysis, were undertaken. During the coming year, the data from the cruise will be processed and modelled. The satellite imagery will be examined on the innouse image analysis system for its potential for comparative modelling.

(b) Chemical Oceanography

Studies of nutrient regeneration processes and the carbonate-alkalinity system in Baffin Bay have continued through 1983 in collaboration with scientists from the Chalmers University of Gothenburg, Sweden. The results of work in Baffin Bay have been used to construct a model for the stoichiometric composition of regenerating biogenic material which appears to differ in Baffin Bay from other areas of the ocean that have been studied. This model should have application to the assessment of the consequences of increased carbon dioxide assimilation by the ocean resulting from the build-up of atmospheric carbon dioxide from fossil fuel combustion. During 1983, better quality carbonate measurements were obtained from Baffin Bay and these will be used to test and refine the model further. Similar work conducted in the vicinity of Svalbard and in the Arctic Ocean has been extended through the occupation of stations from the CESAR ice-camp.

Previous studies of artificial radionuclide distributions in the Norwegian Sea and Arctic Ocean were extended during 1983 with measurements carried out during the CESAR ice-camp expedition. These latter measurements were made not only to acquire information on the distribution of naturally-occurring nuclides in the Arctic Ocean but also, to re-examine the vertical distribution of fission-product nuclides.

Studies of the distribution of sea-ice meltwater have continued in the Arctic Ocean, Baffin Bay and the Hudson Strait/Labrador Shelf region. These investigations are being complemented by studies of the chemistry of sea-ice, particularly the nature of major ion fractionation that occurs as sea-ice is formed.

In collaboration with the Greenland Geological Survey, studies to determine the factors that govern the dispersal of metal-rich particles that are introduced in mine-wastes to a double fjordic system on the west coast of Greenland are continuing. Further analyses of particulate matter samples are being undertaken to provide more information on the impact of metal contamination of the area.

(c) Marine Ecology

Studies were done to determine the relative importance of microplankton in the respiration and cycling of nutrients in marine plankton communities and how they effect primary production in diverse ocean environments. A joint series of experiments designed in cooperation with Chemical Oceanography (AOL) were carried out during the 1983 Arctic cruise to investigate the biochemical composition of particulate and dissolved organic matter and its relationship to nutrient regeneration in Baffin Bay.

Studies of the physiological and biochemical mechanisms of adaptation of arctic phytoplankton have been underway for 6 years. Major emphasis has been placed on the importance of light, temperature and nutrients in regulating growth and on the capabilities and nature of the response of population to these environmental properties.

MEL scientists spent several weeks in March, April and May working with scientists from the Bayfield Laboratory on the shore-fast ice in Barrow Strait near Resolute Bay, N.W.T. studying the effects of water mass characteristics and the development of plant communities in spring on the physiology and distribution of pelagic zooplankton. A second program investigated zooplankton physiology and distribution during August and September after break up as part of the Hudson cruise. The studies at Resolute were carried out with the generous logistical support of the Polar Continental Shelf Program and the OSS Central Region Physical Oceanographic Program. The cooperation of Bayfield scientists also enabled us to extend this year's observations into June. Scientists from the National Museum have also cooperated in surveys of zooplankton distribution in the Barrow Strait region.

In 1983, a 24-hour series of samples was collected at spring tide in April. Triplicate nutrient samples and duplicate zooplankton samples indicate that observed variability is real but difficult to explain without more frequent sampling at several closely spaced stations over longer time periods. Echograms from a 200 KHz sounder show a "layer" at the depth of the pycnocline but sampling did not reveal any association with a concentration of zooplankton. Visits were made to the vicinity of the Dundas Island polynya and samples of ice algae and phytoplankton algae, for comparison with abundances in the Barrow Strait region, were obtained there.

The vertical zooplankton community structure was also examined at a single location at two to three week intervals from late March to early June. The distribution of developmental stages of the larger dominants, *Calanus hyperboreus, C. glacialis* and *M. longa* was fixed over the March-April period and their relative abundance remarkably constant.

(d) Hydrographic Programs

Systematic tidal and current surveys were carried out in Jones Sound, Baffin Bay. During March/April 1983, 5 tide gauges were deployed through the ice in Jones Sound using Resolute Bay as a base.

A major field program to determine the characteristics of the tides in Ungava Bay was carried out by assessing existing data, developing a numerical model of tidal propagation, and the deployment of shore-based and submersible tide gauges and current meters.

Plans 1984-85

(a) Physical Oceanography

A ship-based (CSS Baffin) program will be carried out in northern Baffin Bay during September 30 - October 11, 1984. The program will include the recovery of four current meter moorings layed during 1983/84, deployment of four current meter moorings, laying and recoverying of tide gauge moorings, recovering of three current meter moorings in Ungava Bay.

Participation is planned in the international MIZEX program in the Greenland Sea ice edge.

(b) Chemical Oceanography

A ship-based program is planned to determine the plutonium distributions in the water column and sediments near Thule, Greenland.

(c) Marine Ecology Program

The program will be carried out at two over-the-ice camps near Resolute Bay. Investigations will be made on the biochemical composition of particulate organic matter and its relation to digestion in zooplankton.

Central Region (Bayfield Laboratory of Marine Science and Surveys)

Review 1983-84

Following reorganization within Ocean Science and Surveys, personnel from the Bayfield Laboratory will no longer be conducting oceanographic programs in the Arctic. Programs and responsibilities will be transferred to the Institute of Ocean Sciences, Frozen Sea Research Group in Sidney, B.C., and to the Bedford Institute of Oceanography, Dartmouth, N.S. The Bayfield Laboratory will continue to be responsible for hydrographic surveys and will undertake some research and development projects.

Plans 1984-85

Ice radar work will include the development of ice-classification radar. Further experiments are planned for the summer of 1984 in collaboration with other government/industry agencies and universities on board Cominco's MV ARCTIC. Stepped-frequency downlooking radar experiments are also planned to determine ice-thickness from an airborne platform. This project will be undertaken jointly with University of Toronto and will depend on the success of ongoing laboratory studies.

Quebec Region

Review 1983-84

In the winter of 1983 OSS Quebec Region personnel conducted a program to study physical and chemical features of the under-ice plume of the Great Whale River in southeastern Hudson Bay. Coincident biological studies of the ice flora and fauna and under-ice zooplankton in the area of the plume were undertaken by personnel from the Arctic Biological Station.

Plans 1984-85

In the winter of 1984 a program to examine the under ice circulation in James Bay will begin.

A program to examine basic oceanographic parameters in N.E. Hudson Bay and Hudson Strait will commence in 1984. Several long-term instrumentation moorings will be placed and data collected concerning primary and secondary production. This study will be part of a program being initiated by DFO to examine the potential development of commercial fisheries in the area.

Canadian Hydrographic Service

Economic Function: Transportation

Responsibilities

The Canadian Hydrographic Service (CHS) conducts hydrographic surveys in northern waters and produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables for northern regions.

Review 1983-84

Surveys

In the Spring of 1983, Central Region hydrographers participated in the CESAR (Canadian Expedition to study Alpha Ridge) project. The area of operation was the Arctic Ocean, northwest of Ellesmere Island, where a total of 1263 spot soundings and gravity observations were obtained. *C.S.S. Baffin*, from Atlantic Region, conducted route surveys in Jones Sound. The *M.V. Polar Circle*, from Pacific Region, completed a tanker corridor through the Beaufort Sea. In Parry Channel an over-ice survey was carried out in the northern part of Viscount Melville Sound. Surveys were also undertaken by Atlantic Region in Freeman's Cove and in Wellington Channel. On Baffin Island, reconnaissance sounding was done in Cambridge Fiord and 50% of both Itikbilung and MacBeth Fiords were surveyed. In Hudson Bay, staff from Central Region carried out surveys of Eskimo Harbour and approaches, while in Foxe Basin, Atlantic Region personnel made a side-scan sonar search in the vicinity of Hall Beach for the wreck of the MV *Edgar Jourdain*.

Tides, Currents & Water Levels

A network of permanent water level gauges is maintained in the Arctic. These gauges are presently located at Alert, Frobisher Bay, Resolute Bay, Spence Bay, Cambridge Bay, Coppermine, Cape Parry, and Tuktoyaktuk. In addition, long term deployments of submersible water level gauges are presently supported at Mould Bay, Isachsen, Audhild Bay and Pond Inlet for mean sea level studies.

Additional tidal and tidal current studies were carried out using temporary instrument deployments (one to two months) in Dease Strait, Prince Regent Inlet, Jones Sound, Baffin Bay, and Foxe Basin. These studies were either part of a multi-year project to study the propagation of the tide in the arctic or in support of hydrographic field surveys.

Additional activities centred on the development of water level gauging and current measuring instruments for arctic applications.

Chart Production & Sailing Directions

Two new arctic charts, 56 new editions and 20 reprints were produced.

Plans 1984-85

Surveys

In the Beaufort Sea, multidisciplinary surveys will be done from Herschel Island to the 41st meridian under the Pacific Region's control. A through-ice operation will be undertaken in Prince Regent Inlet by Central Region personnel assigned to the Polar Continental Shelf Project. Central Region will survey the approaches to Imiujik, a new Inuit community on the east side of Hudson Bay, north of Great Whale River. In Foxe Basin Atlantic Region has tentatively scheduled surveys from Foxe Channel to Hall Beach and into Roche Bay. The survey of Jones Sound and of Parry Channel will continue. Tentatively planned are route surveys in the Archipelago and surveys in Pullen Strait and in the vicinity of Bylot Island and Broughton Island. Additional work is planned for Parry Channel. A route survey in Victoria Strait may be done.

Tides, Currents and Water Levels

Permanent gauging stations and long-term deployment supporting mean sea level studies will be visited and the instruments serviced. Tide and/or tidal current studies will be carried out in the following areas: Gulf of Boothia, Jones Sound, Baffin Bay, Ungava Bay, Foxe Basin, Hudson Bay and James Bay. Equipment development projects begun last year will be continued. A newly-developed permanent water level gauging system will be installed at the Polaris mine site on Little Cornwallis Island.

Chart Production & Sailing Directions

Ten new arctic charts, 58 new editions and 15 reprints will be published. A new edition of Arctic Sailing Directions Vol. II will be released in 1985.

Health and Welfare Canada

Medical Services Branch - Yukon Region

Economic Function: Health

Role

The Branch administers and delivers health care programs to all residents of the Yukon. The Branch's Yukon Region serves as the Territorial Health Department, and the Programs Medical Officer acts as Chief Medical Officer of Health.

The Branch's Yukon regional office facilitates community clinical visits by private physicians and dentists and makes arrangements for clinical services to outlying communities. Costs of health care are shared between Medical Services Branch and the Yukon Territorial Government. The latter administers the Health Care Insurance Plan and contributes to a cost sharing formula for capital and operating costs of the health care system.

Facilities

The Branch's regional office operates one general hospital, three cottage hospitals, two nursing stations, ten health centres, and four health stations.

Review 1983-84

Health care programs provided include Child and Maternal Health, Immunization, Tuberculosis Control, Communicable Diseases, School Health (includes School Dental Health), Environmental Health, Mental Health, Health Education, Public Service Health, Hospital Services, and the National Native Alcohol and Drug Abuse Program.

Maternal and Child Health continued as a priority this year. Prenatal classes held in all major centres of the Yukon were well attended. The provision of dental services continued with services to the remote communities being provided by dentists located in Dawson city, Faro, and Whitehorse. Dental therapists continued to provide services to preschool to grade eight children of the Yukon.

Membership on the Yukon Territory Water Board continued, in the person of the Programs Medical Officer who was involved in several ongoing investigations with other Federal departments. Investigations included the woodsmoke pollution in Riverdale (Whitehorse), and the arsenic content of raspberries in Carcross. A close relationship was established with the Yukon Territorial Government in Health Services and Program delivery.

The Branch's regional office continued to assist and encourage out-of-Territory medical specialists to visit and provide clinical services to the residents of the Yukon at Whitehorse General Hospital in the fields of:

- Paediatrics
- Orthopedics
- Dermatology
- Otorhinolaryngology
- Ophthamalogy
- Rheumatology
- Oncology
- Internal Medicine
- Neurology

The Health Liaison Program with the Council for Yukon Indians continued to assist in upgrading the overall health status of the Indian people.

The Environmental Health Programs increased its role in health inspections of facilities throughout the Yukon Territory.

A comprehensive review of Nutrition Services was carried out by an interdisciplinary team from Branch Headquarters in consultation with regional staff. This study (September 1983) resulted in Nutrition Services being updated, strengthened, and developed to extend to areas outside of Whitehorse. More emphasis was placed on health promotion.

The Mental Health Program continued to promote community awareness and was strengthened by the addition of another psychologist and a native mental health worker.

Communicable Disease Control continued to promote public awareness of sexually transmitted diseases. A decline of confirmed cases of gonorrhea during the 83/84 period reflected this initiative.

The 1983/84 period was considered a "developmental" year for the National Native Alcohol and Drug Abuse Program. Emphasis was placed on the need for training for Board members, N.N.A.D.A.P. consultants and community workers. Twenty-three contribution agreements were active by November of 1983. Eleven Bands have N.N.A.D.A.P. projects at present.

The Whitehorse General Hospital was involved in a community disaster exercise. All areas of the hospital benefited from the experience. Equipment acquired during this period included a "birthing bed". Consultants were commissioned to carry out a study of the Whitehorse General Hospital's adequacy as a treatment centre.

Maintenance and Construction

A new Health Centre at Carmacks opened in February 1984. In Watson Lake and Mayo, homes were purchased to provide nurses' residences. A Beaver Creek house was purchased and renovated to provide a Health Station and overnight accommodation. Renovations for the Laboratory Department at the Whitehorse General Hospital were completed.

Medical Services Branch - Northwest Territories

Role

The Northwest Territories Medical Services Branch provides acute treatment care and preventive health services to residents of the Northwest Territories, with the exception of those in Yellowknife, Hay River and Fort Smith where acute treatment care is provided by the Territorial Department of Health. That department is also responsible for the Territorial Hospital Insurance Services Plan, the Territorial Health Care Plan and supplementary health programs. The N.W.T. Government, under a contractual agreement, provides Medical Services Branch with support services in Finance and Administration.

Facilities in the Northwest Territories operated by Medical Services Branch include three hospitals: the Inuvik General Hospital with 55 beds, and two cottage hospitals; one in Fort Simpson and one in Rae-Edzo. In addition, there are 39 Nursing Stations, eight Health Centres and a number of Health Stations. The Nursing Stations provide treatment and public health services by nurse practitioners who, apart from their basic RN qualifications are trained in public health and mid-wifery and have gained expertise in diagnosis and treatment. The Nursing Stations are visited on a regular basis by physicians from the base hospitals and specialist services are provided by a number of universities including McGill, Manitoba, Alberta and the Clarke Institute of Psychiatry in Toronto. As well, a contract with the Government of the N.W.T. provides physician services.

All organized communities in the Northwest Territories are provided with Dental Services through fee-for-service private practitioners, Government Dental Staff and Dental Therapists. The latter reside in the community and service several satellite communities on a regular basis.

A team of nine Environmental Health & Surveillance Officers based in Frobisher Bay, Inuvik, Hay River, Yellowknife and Churchill, Manitoba perform the environmental health and surveillance function. These officers fulfill a three-part function in that municipal, territorial/provincial and federal levels of expertise are required. Working in close co-operation with other federal and territorial units such as the environmental protection agencies of various levels of government they identify problem areas and take corrective action.

Review 1983

One major management objective of the Yellowknife Region was achieved in that all senior positions in the Regional Headquarters and the four Zone Directors are now staffed with permanent appointees.

The Region is developing a more comprehensive and integrated relationship with the Government of the Northwest Territories through the Health Co-ordinating Committee. Meetings are held on a monthly basis with daily liaison on matters of mutual concern.

During the year a Mental Health Program was set up in Inuvik to address a significant increase in mental illness. The program includes co-ordinators to train community residents to recognize early symptoms and a team of specialists on contact to provide supporting expertise. The applicability of this program delivery method is being studied for other Zones.

The Community Health Representative Training Program is now established in Frobisher Bay for the Eastern Arctic. Participants were selected from their home communities on the basis of recommendations from settlement leaders. The first students are expected to graduate in September 1984. Employment upon graduation will be through contribution agreement with settlement councils. This program is the first component of a multi-year plan to train new CHR's and to upgrade the qualifications of existing CHR's. Resources both within and outside the Region have been utilized to establish the program, develop the curriculum and ensure that course material is up to date.

In response to needs identified by the Dene Nation and Kitilameot Inuit Association, a Health Liaison Officer contract has been let to provide an additional communications link between the client and Medical Services Branch in the Western Arctic. This action is in response to the clients' wish to be involved in the health-care delivery system.

A well attended "Hearing Workshop" was held in the Baffin Zone in response to the identification of client group hearing problems.

An audiology unit has been formed in Frobisher Bay to provide treatment for those suffering from hearing ailments and to support educational thrusts to reduce their incidence.

Social Services Programs Branch

Economic Function: Welfare

Canada Assistance Plan (CAP)

The Canada Assistance Plan, enacted in 1966, contributes 50 per cent of costs of provincial, territorial and municipal public assistance and welfare services expenditures. The Plan provides assistance to persons in need and encourages the development and extension of welfare services to prevent and remove poverty, child neglect and dependence on public assistance. In addition to sharing the cost of welfare services, the Canada Assistance Plan provides consultant services to the provinces and territories on income support, day care, child welfare, institutional care and community development.

The federal contribution through CAP for the fiscal year 1982/83 was $10.1 million for the N.W.T. and $2.6 million for the Yukon Territory.

Vocational Rehabilitation of Disabled Persons Act (VRDP)

VRDP is a shared-cost program. The federal government shares 50 per cent of costs incurred by provinces and territories in providing a comprehensive program for the vocational rehabilitation of physical and mentally disabled persons.

The contribution for the fiscal year 1982-83 was $442,000 for the N.W.T. and $1.74 million for the Yukon Territory.

Income Security Programs Branch

Family Allowances

Health and Welfare Canada pays monthly Family Allowances on behalf of children under 18 who are maintained by a parent or guardian who lives in Canada and is subject to Canadian Income Tax. In March 1984, the Department paid allowances on behalf of 6 976 children in the Yukon and 20 058 children in the Northwest Territories.

For the 1984 calendar year, the rate payable in the Yukon and Northwest Territories is the federal rate of $29.95 per month.

A program known as the Child Tax Credit started in January 1979. It is administered through the Income Tax system and provided an annual benefit of up to $343. on behalf of each eligible child for the 1983 taxation year.

Old Age Security

The Old Age Security Act authorizes a non-contributory program that provides a monthly benefit to all people 65 years of age and over who can satisfy certain basic residence requirements and who are Canadian citizens or legal residents of Canada.

The Act also provides a Guaranteed Income Supplement to pensioners living in Canada who have a limited income. Again, where income is limited, the Spouse's Allowance is another benefit payable to the spouse of an Old Age Security pensioner. In March 1984, the basic monthly Pension was $263.78.

The maximum monthly supplement was $265.60 for a single or married pensioner whose spouse was not receiving either the Pension or a Spouse's Allowance, and $204.86 each for a married couple.

In March 1984, 759 persons were receiving the Old Age Security Pension in Yukon. Just over half of the recipients (381) received a supplement. In the Northwest Territories, 1 337 people were receiving Old Age Security Pensions, and of these, 1 084 were receiving a supplement. There were 19 recipients of Spouse's Allowance in Yukon and 75 in the Northwest Territories.

The Family Allowances and Old Age Security programs are administered in Yukon and the Northwest Territories from the Regional Income Security Programs Office in Edmonton, Alberta.

Canada Pension Plan

The Canada Pension Plan, in existence since January 1, 1966, is a compulsory, contributory, earnings-related plan. Together with the Quebec Pension Plan, it covers virtuallly all employed persons between the ages of 18 and 70 in Canada. The maximum retirement pension in 1984 is $387.50 per month.

Beneficiaries by the type of benefit and by Territory

March 1984

Territory	Retirement Pensions	Disability Pensions	Children's Benefits	Death Benefits	Surviving Spouse's Pension	Orphan's Benefits
Yukon	414	46	16	3	216	176
N.W.T.	297	26	42	5	218	364

Indian and Northern Affairs Canada

Northern Affairs Program

Responsibilities
Northern Affairs program activities include the management of northern resource development, the protection of the environment, the preservation of native languages and cultures, and the political evolution of the northern territories.

Northern Policy and Coordination Branch

Economic Function: General Government Services

Northern Policy and Coordination provides the focus within the department for interdepartmental efforts to coordinate federal and territorial policies and programs affecting the North. In addition, it has particular responsibilities for policy development and evaluation, northern research, and special social, cultural and economic development programs for the Inuit.

Northern Policy Directorate

Responsibilities
The Northern Policy Directorate provides a strategic framework within which policies for the north are developed to ensure that they are integrated into and consistent with the government's overall objectives for the north.
The directorate comprises three divisions which, with their respective responsibilities, are indicated below.

Northern Policy Division

The Northern Policy Division ensures that policy initiatives of the Northern Program, the Department and other federal departments, consistently reflect the federal government's objectives for the North. The Division performs this task by participating in major Program policy development initiatives including those relating to Northern political and constitutional development, northern economic development, environmental management and program policy management and coordination. It also coordinates the Northern Program's involvement in the Departmental strategic planning process and Native Claims and provides a Program focus for the review and analysis of other departmental and governmental policy initiatives which affect the North.

Highlights for 1983/84 included the provision of policy advice and support for the Program's assessment of major resource development projects, land use planning, and regulatory review. The Division contributed as well to ongoing discussions concerning northern political development and comprehensive native claims negotiations.

The Division produced the annual publications "Government Activities in the North" and "Annual Northern Expenditure Plan", and published the second edition (1983) of "Guide for Expeditions to the Canadian Arctic Islands". All three publications are available in both official languages.

Native Claims Division

Formed early in 1982, the Division coordinates program inputs to the native land claims negotiation process and provides advice to management on the policy, program and operational implications of concessions made to native groups.

Parliamentary and External Relations Division

This Division coordinates the Northern Affairs Program's support of the Minister's Parliamentary responsibilities by providing background information to assist him in answering to Parliament. It also prepares issue-related briefings for use during visits to the North by Cabinet Ministers.

The Division also plans, organizes and conducts tours of the North for Cabinet Ministers, Senators, foreign dignitaries, senior government officials, and members of the media.

Territorial Relations Division

Economic Function: General Government Services

A plebiscite was held in 1982 on the question of division of the Northwest Territories. Division was supported by a majority of voters. As a result, a Constitutional Alliance was formed, endorsed by the Legislative Assembly and made up of representatives from all N.W.T. native groups and the Legislative Assembly. The Alliance is divided into two forums, the Nunavut and the Western Constitutional Forums, with the federal government providing funds for their operations. Each meets separately, but come together as an Alliance to negotiate the location of a divisional boundary. Since the federal government accepted in principle the division of the Territories in November 1982, the two forums have been holding public meetings and discussions in both the Eastern and Western Arctic to arrive at a consensus on the crucial issues of boundaries, future locations of any new administrative centres, and the distribution of powers among local, regional and territorial levels of government.

An N.W.T. election was held in November 1983 to elect twenty-four legislators. The new Executive Council is composed of the Commissioner and eight elected members. The role of the Deputy Commissioner has been changed to that of a part-time, stipendiary position, with no portfolio responsibilities. The incumbent of the position no longer sits as a member of the Executive Council. Chairmanship of the Financial Management Board was assigned to the territorial Minister of Finance.

The federal government, in November 1982, renewed its longstanding commitment to more responsible government in the Yukon. Accordingly, the Yukon Act will be amended as soon as native claims have been settled to confirm in law the steps already taken toward achieving responsible government in the Territory. Related in-house work has been carried out.

A formula-based approach to providing federal financial support to the Territories will be introduced as soon as possible to allow improved fiscal planning and to enable northern governments to assume full accountability for their budget decisions.

To further strengthen Territorial governments and help them deal with related costs of resource development, the federal government has committed itself to giving the Territories a certain level of discretionary revenue. Specific proposals are being developed.

Review 1983-84
The Division continued to monitor the progress of constitutional development in the two Territories and to provide funding for that purpose. Federal-territorial financial agreements were coordinated.

Plans 1984-85
Federal-Territorial Financial Agreements covering fiscal year 1984-85 are as follows:

Financial Agreements 1984-85 ($000)

Yukon Territory	
Operating Grant	83,402
Capital Grant	28,123
Loans	Nil
Northwest Territories	
Operating Grant	300,625
Capital Grant	83,479
Loans	Nil

Additional Financial Assistance (Outside Agreements)

Yukon Territory:	
Hospital care of Indians & Inuit	1,313
Medical care of Indians & Inuit	376
Low income rental purchase housing	208
Northwest Territories:	
Hospital care of Indians & Inuit	14,028
Medical care of Indians & Inuit	2,135
Low income rental purchase housing	NIL

Norman Wells Project Coordination Office

Economic Function: General Government Services

Responsibilities
The Office is responsible for co-ordinating all programs and activities associated with the construction and operation of the Norman Wells Oilfield Expansion and Pipeline Project in the N.W.T. and manages all departmental programs relating to the Norman Wells Project.

Review 1983-84
This year is the second of a five-year federal funding program that received approval in principle when Cabinet approved the Norman Wells Project on July 30, 1981. The Office co-ordinated activities for the Project and liaised with other federal departments and agencies, the Government of the Northwest Territories (GNWT), the Dene Nation and Métis Association of the Northwest Territories (MANWT) as well as the sponsors of the Project - Interprovincial Pipeline (NW) and Esso Resources Canada Ltd.

In addition to the regional offices in Yellowknife and Fort Simpson, a regional office was set up at Norman Wells.

Esso Resources' construction program was 65% completed by March 31, 1987. Construction of the mainline pipeline began in the N.W.T. in January and ended in April 1984 with 587 kilometers of line laid.

The Community Advisory Committee, with members selected by communities and appointed by the Minister of DIAND, was established and held regular meetings.

Plans 1984-85
Construction on the mainline pipeline will be completed by March 1985. During the summer of 1984 the main river crossings will be constructed and the pump stations built.

The Dene Nation and the Métis Association will implement their community-based impact monitoring programs. These programs will complement DIAND's socio-economic monitoring study (by the University of Saskatchewan under contract) now in its fourth year.

Public Review Division

Economic Function: General Government Services

Responsibilities
The Division is the focal point for the Northern Affairs Program's involvement in public assessment and review of major development proposals north of 60°. The Division coordinates assessment and review activities within the Department and between the Department and other federal departments and agencies, the Territorial Governments and northern and native groups. It provides intervenor funding to enable these groups to participate in the public review process. The Division maintains a documentation centre holding a variety of information of interest to the public, relating to major northern development proposals.

Review 1983-84
The Division maintained liaison with the Beaufort Sea Environmental Assessment and Review Process (EARP) Panel on behalf of the Department. An update to the 1982 detailed statement of the Department's northern mandate and responsibilities was provided to the Panel. The Division coordinated the departmental review of the Environmental Impact Statement deficiency responses which were prepared by proponents of the Beaufort Sea development proposal. Technical, environmental and socio-economic information was reviewed by teams composed of departmental staff from various sectors of the Northern Affairs Program (NAP), Canada Oil and Gas Lands Administration (COGLA), Office of Native Claims (ONC) and Indian and Inuit Affairs Program (IIAP).

The EARP Panel held both community and general hearings during the period. Community hearings, which focussed on local concerns and perceptions, commenced on September 14, 1983 and were held in Beaufort Sea-Mackenzie Delta, Northwest Passage and Eastern Arctic region communities as well as Nain, Labrador. General hearings, which focussed on technical, environmental and government management matters, were held in Inuvik, Whitehorse, Calgary, Yellowknife and Ottawa. A division staff member accompanied the Panel as senior departmental observer and filed daily summaries on the hearings. The summaries highlighted matters raised at both the community and general hearings and were widely circulated to other government departments and agencies and the territorial government.

The Division provided secretariat services to a departmental Steering Committee and coordinated Departmental activities at the hearings.

The Division continued to provide intervenor funding to enable northern communities, northern organizations and the Beaufort Sea Alliance (a coalition of southern and northern environmental interest groups) to prepare and participate in the Beaufort Sea EARP hearings. Over the course of the Beaufort Sea EARP the Division provided intervenor funding to nineteen northern communities and seven northern native organizations. In excess of $1 million intervenor funding was disbursed over a three year period (1981-82 to 1983-84) for the Beaufort Sea EARP, through an independent funding committee with administrative processes being carried out by the Division and the Federal Environmental Assessment Review Office (FEARO).

The Beaufort Sea EARP hearings concluded on December 16, 1983. The Division identified key northern issues raised at the hearings and maintained liaison with the Beaufort Sea EARP Panel secretariat during the remainder of the review period.

The Division coordinated a departmental review of proposed changes to EARP, conducted interdepartmental consultations on intervenor funding programs and policy, and contributed to the finalization of the terms of reference for the EARP Panel on the proposed Slave River hydro-electric development.

The National Energy Board (NEB) hearings into the Arctic Pilot Project remained inactive, having been postponed by the NEB in 1982-83. The Alaska Highway Gas Pipeline also remained relatively dormant during the review period.

A wide range of materials on the Beaufort Sea and other northern development proposals and public hearings (transcripts, applications, research reports and other documents) are readily available in the Division's documentation centre to a wide range of research interests both within and outside government.

The Division examined factors related to a compensation policy for hunters/trappers affected by northern development activities and carried out extensive interdepartmental and intergovernmental consultation on compensation issues.

Plans 1984-85

Polar Gas has announced it will file an application for a 0.9 metre diameter pipeline to link gas reserves in the Mackenzie Delta with pipeline systems in Alberta. The Division will examine public review/public consultation needs and processes in consultation with other sectors of the Northern and Indian and Inuit Programs.

The Division will coordinate a departmental response to the Beaufort Sea EARP Panel report, expected to be publicly released in July 1984.

The evaluation of the intervenor funding process used for the Beaufort Sea EARP will be completed during the period and should provide indicators for future funding programs.

A compensation policy for wildlife harvesters adversely affected by major northern development projects will be drafted.

Office of the Northern Research and Science Advisor

Economic Function: Short-range Research

This office advises NAP and other government departments, industry and universities on northern scientific matters; encourages a co-ordinated and effective approach within the Northern Program to funding and implements NAP scientific activities in the North; promotes northern science development; and manages research, scientific and technological activities between Canada and other circumpolar countries.

Review 1983-84

Various activities were carried out under the four main areas of northern science, social research, circumpolar/international affairs and science coordination and information.

The Northern Scientific Training Grants Program allocated $725,000 to 26 universities to assist in providing advanced students with professional experience in the North. The program achieves its objectives by encouraging the formation of multidisciplinary focal points for northern studies within Canadian universities; and providing supplementary financial assistance to universities to help offset the cost to students of specialized studies in the North. With the refinements to Program policy and guidelines firmly in place, activities focussed on the following issues: expansion of the NSTP Committee membership, NST Program publicity initiatives; and preparation of the first Annual Report 1982-83.

The Branch provided policy direction to the two major Scientific Resource Centres located at Inuvik and Igloolik. Moreoever, within the planning framework for the establishment of similar laboratories in other parts of the North as the need arises, a feasibility study of the construction of such a facility in Whitehorse was undertaken. Regarding improvements to the infrastructure of these facilities, emphasis has been placed in recent years on upgrading the Igloolik Resource Centre and its satellite field station at Sarcpa Lake. In addition to ongoing site cleanup at Sarcpa Lake, a permanent radio base station and tower were installed. Materials for mechanical, electrical and plumbing improvements to the existing infrastructure were provided.

In order to effectively monitor the impact of the Norman Wells Project upon the local economy and society, DIAND commissioned Dr. R.M. Bone, University of Saskatchewan, to undertake a monitoring study consisting of (1) a program to record the key demographic and socio-economic characteristics of the populations of each community and to enumerate the number and type of employers and their employees; and (2) to analyze this information and prepare a series of working papers from the data.

The Circumpolar Affairs Section continued to monitor socio-economic, technical and other related issues in the foreign north. Coordination activities included the Canada-USSR Arctic Sciences Exchange Program and the planning process for implementation of the Canada-Denmark Marine Environmental Cooperation Agreement (MECA). Research activities included study of the following issues: the Greenland Home Rule experience; implementation of the Alaska Native Claims Settlement Act with special reference to the Alaska Native corporations; United States Arctic Science policy development; Alaska offshore development; Soviet environmental laws and regulations; demographic, economic and social change among Native minorities in the Soviet North; and resource development as it affects the Maori of New Zealand.

A northern science coordination section was established. Initial steps were taken to establish an inventory and review of northern research supported by the Federal Goverment and the development of a network to coordinate scientific activities within the Northern Program, federal departments and agencies, territorial governments, private industry, universities and international organizations.

Social and Cultural Development Division

Economic Function: Social and Cultural Development

Responsibilities

The Social and Cultural Development Division administers programs that support the social and cultural development of Inuit and other northern native people. The Division has three sections as indicated below.

Administration and Native Liaison Section

This Section provides a link between the federal government and the northern native people. It arranges funding for consultation with native groups on northern development concerns and interests and arranges on the job training, counselling and other support services for Inuit in the National Capital Area.

Inuit Art Section

This section serves as a central agency dealing with all aspects of Inuit art and provides professional assistance to art-producing co-operatives. The Section works with Canadian Arctic Producers and La Fédération des Coopératives du Nouveau Québec to develop markets for northern arts and crafts. A Category "A" designation under the Cultural Property Export and Import Act, allows the receiving of donations of certified Inuit artworks.

The Section conducts research and prepares publications (including a news-letter "Inuit Art and Crafts"), provides information to institutions and the public, and carries out a national and international exhibition and lecture program.

The Canadian Eskimo Arts Council, appointed by the Minister, provides advice on the orderly development of Inuit arts and crafts and helps artists to protect their work through copyright.

Culture and Linguistics Section

The Section provides translation service in a variety of Inuktitut dialects and orthographies, publishes a quarterly magazine "Inuktitut", and administers a grants program that enables Inuit to participate in a wide range of cultural activities. The Section also promotes the development of Inuit literature and language. Finally, the Section administers the Department's funding activities in connection with the Inuit Cultural/Education Centres in the N.W.T. and Labrador.

Review 1983-84

The Division continued to support a number of efforts relating to the activities of the Beverly and Kaminuriak Caribou Management Board established by the Governments of Canada, Manitoba, Saskatchwewan and the Northwest Territories to manage barren-ground caribou migrating across Provincial and Territorial boundaries.

The Eskimo Loan Fund provided more than $540,000 to Inuit and Inuit-controlled business organizations in 1982-83. An additional $1.8 million was paid in economic development contributions. Guarantees were provided for $6.3 million in commercial bank loans.

A comprehensive study of the production and marketing of Inuit carvings was completed. A research contract, awarded to Inuit Tapirisat of Canada to investigate the protection of Inuit art and artists, and to make recommendations for future action, was completed.

Two major exhibitions were organized to showcase Inuit art in the United States. "Arctic Vision" will travel to twelve museums and art galleries in the eastern United States over two years. "Contemporary Indian and Inuit Art of Canada", circulated in co-operation with External Affairs, opened at the United Nations in November 1983 and will continue to tour museums in the southern and western states until March 1985.

A detailed study was undertaken to document the history of the department's role in the development of Inuit art over the last twenty-five years. The study will result in a published report and a computerized index to make archival materials more accessible to researchers in the field.

Two issues of the newsletter "Inuit Art and Crafts" (formerly "About Arts and Crafts") were prepared, including a special feature on "Inuit Art at Rideau Hall", an exhibition presented at the Residence of the Governor General.

In co-operation with Canadian Arctic Producers, work continued on the compilation and publication of extensive career profiles of over 700 Inuit artists. The second edition of "Inuit Artists" was completed in the spring of 1984 and will be distributed through CAP.

A joint Cabinet submission by this department, the Department of Communications and the Department of Secretary of State on Northern Native Broadcasting resulted in the establishment of a four year $40 million program to support the development of northern native radio and television broadcasting. The program is now administered through the Native Citizen's Branch, Department of Secretary of State.

Impacts of the Department's program in support of Inuit culture and language were evaluated and as a result recommendations were made for the future implementation and strengthening of these programs.

Four issues of Inuktitut magazine were published and distributed. Themes included:

- Inuit Music and Performing Arts
- Inuit Language and Writing Systems
- Inuit Communications

The Division supported two training projects for Inuit. One for environmental management will begin in 1984 and will be managed by the Baffin Region Inuit Association. The other is in the area of overall management training and is an update on the Frontier College Training survey conducted in 1975 by Inuit Tapirisat of Canada.

During the year special courses were offered to Inuit in Air Mechanics, Air Pilot Training and Heavy Equipment.

During the year the On-the-Job Training Program was decentralized to the Northern Program's Regional Offices in Whitehorse and Yellowknife. Similarly operations of the Eskimo Loan Fund were transferred from Ottawa to the Regional Office in Yellowknife and Quebec City.

Highlights of the Year

A revision of Schneider's Inuktitut-English Dictionary was completed. This major work contains some 23,000 entries.

In co-operation with Laval University, an analytical lexicon of modern Inuktitut in northern Quebec and Labrador was published. A dictionary of the Kangiryuarmiut dialect (Western Arctic) was published in cooperation with the Committee for Original Peoples' Entitlement.

An Inuktitut translators conference on hunting and biological terminology was sponsored jointly with the Inuit Cultural Institute.

On a pilot project basis, an educational kit covering the importance of Caribou to northern life-styles was produced for use in northern schools.

Plans 1984-85

An exhibition on Inuit printmaking techniques will be prepared for circulation within Canada. A sculpture exhibit will tour major cities of West Germany.

To increase public awareness of the department's Inuit art collection and related activities, the second installment of the Catalogue of Services and Collections and an introductory brochure on Inuit art will be prepared. Both will be available for distribution to the general public.

Four issues of Inuktitut magazine with themes including Arctic Survival, Arctic Transportation and Northern Quebec are planned.

An Inuktitut-English version of the Schneider dictionary will be published in co-operation with Laval University.

Implementation of recommendations resulting from the evaluation of the Department's programs in support of Inuit Culture and Language will begin.

The operations of the Division's Vocational Training Section will be terminated. Its responsibilities will be decentralized to the Northern Program's Regional offices or transferred to Inuit organizations in Northern Quebec.

To re-align Branch responsibilities with Branch mandates, the administration of direct loans, economic development contributions and bank loan guarantees will be transferred from the Division to the Northern Resources & Economic Planning Branch.

Northern Environment Branch

The Branch is made up of three directorates, namely Renewable Resources, Land Use Planning and Environmental Protection.

Renewable Resources

Water Resources Division

Economic Function: Economic Development - Other

Responsibilities

The division is responsible for the protection and management of the inland waters of Yukon and the NWT and arctic marine waters adjacent to the mainland and islands of the Canadian arctic. It controls the use of land and waters for hydro power developments on federal lands south of 60°. These responsibilities are carried out under the Northern Inland Waters Act, the Arctic Waters Pollution Prevention Act (for non-shipping activities) and the Dominion Water Power Act.

Offshore Review of 1983-84

In the offshore area, environmental regulation and monitoring of all drilling activities were carried out. Approval to drill were given to Esso from one artificial island, to Dome from four drillships and one artificial island, to Gulf, from their new conical drilling unit and an artificial island and to Panarctic, from four ice islands.

Water Management Agreements

Discussions with the Province of Alberta will lead to the negotiation of a water management agreement between Canada and Alberta, by which, transboundary water management issues at jurisdictional boundary crossing points can be addressed.

The Minister has asked the Province of British Columbia that consideration be given to initiating similar discussions relating to transboundary water issues between the Yukon, the Northwest Territories and British Columbia.

River Basin Studies

Draft agreements have been prepared in consultation with federal agencies and the Provinces of Saskatchewan, Alberta and British Columbia to implement the recommendations of the Mackenzie River Basin Study.

All field work on the Yukon River Basin Study has been completed. The final report is expected in the fall of 1984.

Legislation
Draft legislation concerning amendments to the Northern Inland Waters Act and the Arctic Waters Pollution Prevention Act were completed and are expected to go to Cabinet for consideration early next year.

Inspection
The Division continued to monitor and enforce the terms and conditions of water licences and authorizations for inland waters. Water licences and authorizations were issued for the stream crossings in NWT associated with the pipeline from Norman Wells, N.W.T. to Zama, Alberta. A public review was held to determine a satisfactory environmental regime for the placer mining industry in the Yukon.

Plans 1984-85
The Division will conduct a study of ways and means of financing mine abandonment and long-term environmental protection.

Discussions will continue with British Columbia, Alberta and Saskatchewan on the negotiation of water management agreements with the Yukon and Northwest Territories.

Land Management Division

Economic Function: Economic Development - Other

Responsibilities
The Division administers surface land rights and environmental regulations for 3.9 million km^2 of northern Canada lands in the Yukon and NWT and another 1 million km^2 of submerged lands in Canada's northern offshore regions.

Review 1983-84
The Division was involved in the revision of regulations related to northern land management. The Territorial Lands and Public Lands Regulations were redrafted to comply with the federal government's policy on 6 and 5% price increases. A final draft of the Territorial Lands and Public Lands Pits and Quarries Regulations was completed in consultation with DIAND's regional offices, the territorial governments, native groups and industry. The Pits and Quarries Regulations are expected to be promulgated in 1984/85 and will replace the Territorial Quarrying Regulations.

The Division continued to represent the Northern Program in the comprehensive native claims fora on matters related to lands and resource management. Input was provided to the Committee of Original Peoples Entitlement (COPE), Council for Yukon Indians (CYI), Dene-Métis and Tungavik Federation of Nunavut claims negotiations.

Work on the preparation of a Lands Manual continued. A directive on the development of policies and several specific operational policies were completed.

Approximately 445 applications were received for land use permits for exploration and development related activities in the Yukon and Northwest Territories. After study and appropriate consultation, related sets of operating conditions requirements were prepared. Permits were issued for road construction, mineral exploration, petroleum exploration, campsites, quarrying and land clearing.

Approximately 135 quarrying permits were granted authorizing the removal of 5,503,640 cubic meters of sand and gravel in the Yukon and Northwest Territories. Large quantities of borrow material mainly dredged sand, were used for the construction of islands in the Beaufort Sea.

A final report on "The Establishment of Polar Bear Pass Ecological Site" was released to the general public in June 1983. Surface and subsurface lands and marine areas of Polar Bear Pass were withdrawn from disposition, recognizing existing rights. The surface land will be transferred to the administration, management and control of the federal Minister of Environment under the Canada Wildlife Act.

A general "Memorandum of Understanding Respecting the Administration of National Wildlife Areas" was signed in January 1984 by the Deputy Ministers of DIAND and DOE.

Background papers for the Task Force on Northern Conservation (established by the Minister in 1983) were prepared. The Task Force was asked to recommend a framework for a conservation policy strategy, and mechanisms for implementation, to the Minister and other appropriate government ministers, by mid 1984.

Consultation with Parks Canada on the establishment of the proposed North Yukon and Ellesmere Island national parks continued.

Grants of right-of-way easement for the Alaska Highway Natural Gas Pipeline and the Norman Wells Pipeline, were given in 1983

The Division provided environmental inputs to exploration agreements negotiated by COGLA with the various oil and gas companies operating in the North and in cooperation with industry, conducted studies of gravel resources and projected granular requirements for exploration, development and production operations in the Beaufort Sea. These studies have identified areas requiring further research, to enable the delineation of resources for Beaufort Sea operations and to enable better management of this resource.

The Northern Lands Transaction system was revised in 1983/84 and will be operational in the Yukon and NWT regional offices by 1984/85. The system will provide an information base to support the disposition and management of northern lands.

In 1983 the Division published a booklet "Land Use Guidelines: Mineral Exploration Yukon and Northwest Territories" as part of a series on techniques and guidelines for minimizing environmental damage.

Plans 1984/85
The Division plans to continue an in-house review of its administrative policies and procedures to identify ways and means of achieving greater operational efficiency and consistency in its administration of northern lands. Further work will be carried out on the Territorial Lands and Public Lands Regulations. The Pits and Quarries Regulations will likely be promulgated. The Division will continue to participate in native claim negotiations; prepare Orders-in-Council to withdraw surface and/or subsurface lands from disposition recognizing existing rights; and represent the Northern Program at oil and gas exploration agreement negotiations where environmental aspects are being considered. The Division will contribute to support the report of the Task Force on Northern Conservation. Land use guidelines on access roads and trail construction and hydrocarbon well sites will be published.

Forest Resources Division

Fire Management Program

Economic Development - Other

Responsibilities

Forest fire management is a key element in the administration and control of northern renewable resources. The Program provides protection to communities, timber, power transmission and communication networks, recreation areas, watersheds, erosion-prone sites and community-oriented wildlife areas.

Review 1983-84

Fire prevention continued to be a priority. Combustible materials of natural origin were removed from the perimeters of a number of communities. The public relations program was amplified by an increase in fire prevention messages on radio and television networks. In some instances, these messages were translated into local native languages.

Fire detection programs in both territories were upgraded this year with the addition of fire towers in both Territories and further development in the use of the automatic lightning detector network. Yukon has negotiated with Alaska for the exchange of lightning strike locations using compatible computer systems.

Intensive training of both permanent fire management staff and emergency fire fighters continued. Emergency fire fighters received St. John Ambulance emergency first aid instruction in addition to fire suppression training. Specialized courses were given to permanent staff in aerial observation, helicopter management, air attack methods and "mixmaster"[1] operations.

Other activities included studies on the implementation of a fire season severity rating system; a prescribed burn in Yukon to assess the value of fire in improving Dall sheep range; and the finalization of modifications and the selection of spare parts for the four CL-215 aircraft being bought for fire suppression use.

The fire suppression program was relatively successful this year due, in part, to increased efficiency and favourable weather. Burned areas were approximately 333 500 hectares for 540 fires as compared with 548 000 hectares for 561 fires in the previous year. Fire suppression expenditures were about 10% lower than in the previous year.

Final drafts of Fire Control and Prevention Regulations were drawn up and Fire Protection Agreements with the Governments in Yukon and the Northwest Territories were executed. The Department signed, with all other Canadian fire agencies, a "Mutual Aid Resources Sharing Agreement" (MARS Agreement), designed to expedite the exchange of resources in fire emergencies. In addition the Canadian Interagency Forest Fire Centre was incorporated with the Federal Government and all Provincial fire agencies as members. The Centre will collect, analyze and disseminate operational fire situation reports to all members on a daily basis and will coordinate and administer the MARS Agreement.

Plans 1984-85

Improvements in the fire detection program will continue with one tower being added in the N.W.T. and a direction finder installed with the automatic lightning detector system. Yukon plans on integrating its computerized lightning detection system with the one in use in British Columbia and will introduce smoke jumpers to complement its existing initial attack program. Both Regions plan to continue with the intensive training programs and the fire hazard reduction activities around communities and will participate in a study of a computerized integrated fire management system.

Forest Management

Responsibilities

This program provides for the management of the forest resources of the Yukon and the Northwest Territories. The primary objectives are to maintain a contining supply of wood and to create jobs for northern residents.

Review 1983-84

A Departmental forest policy workshop was held early in the year to develop a policy position paper. The subsequent paper received wide distribution within the Northern Program and discussions were held with the Territorial Governments. The next draft will be sent to the Yukon and Northwest Territories for review.

The planning of a forest inventory program continued as a departmental priority. A number of chapters of a Forest Inventory Manual were completed and a detailed outline of a few others was prepared. In Yukon, a photo interpretation contract was let for a reconnaissance survey and good progress made in the development of an area compilation program. In the N.W.T., inventory work continued in the Trout and Slave Management Units.

Due to the high cost of heating oil, many residents are cutting their own fuelwood. As a result, fuelwood management plans and elementary access roads into high yield areas received particular attention. The N.W.T. Region developed a "how-to" pamphlet on fuelwood harvesting and wrote a metric scaling manual for use by all forest product producers. A draft of a Procedures Manual for Timber Disposition Activities was also completed by the N.W.T. Region.

Plans 1984-85

Work will continue on inventory and fuelwood planning activities. Regeneration surveys will be carried out in the Hyland River Valley and a seedling program for reforestation of cutover areas in the vicinity of Watson Lake will be developed.

The forest policy paper will be completed. Draft instructions regarding new legislation for forest management and fire management will go to the Department of Justice.

[1] A fire-retardant chemical is mixed with the water used in water bombers.

Northern Land Use Planning

Economic Function: Economic Development - Other

Northern Land Use Planning Policy

Responsibilities

The Land Use Planning Directorate, Ottawa, functions as a Secretariat to the territorial Policy Advisory Committees and provides policy, technical and professional support to the departmental Regional Planning Offices in Yukon and the NWT. The Secretariat coordinates the activities of the Federal departments and agencies in regard to land use planning.

Review 1983-84

In July, 1981, the Minister, DIAND, announced Cabinet approval of a new Northern Land Use Planning policy.

Discussions with the Yukon Territorial Government and the Council for Yukon Indians resulted in an agreement being drafted on planning principles, and on establishing and implementing land use planning in Yukon. A similar agreement has been reached with the Government of the NWT, and all of the NWT Native Organizations except Committee for Original Peoples Entitlement (COPE). A separate agreement has been drafted with COPE, specific to the proposed Inuvialuit Settlement Region.

Financial approval has been given to implement an expanded planning program, and work is underway to establish the various structures in the planning process. Additionally, discussions continue with other Federal departments, the territorial governments and native organizations to develop land use planning working agreements to facilitate effective resource allocation and operational planning.

Plans 1984-85

The Land Use Planning Program will be so structured that upon implementation, it will provide coverage of the entire North as quickly as possible. Initial emphasis will be on areas where land and resource use pressures are greatest, such as the Beaufort Sea; Liard Valley; Mackenzie Valley; Southern Yukon; and Lancaster Sound.

Lancaster Sound Regional Study

Economic Function: Economic Development - Other

Responsibilities

An Environmental Assessment Review Process Panel, considering an application to drill an exploratory well in Lancaster Sound, concluded in early 1974 that the region's unique combination of physical, environmental and social characteristics required through review before decisions could be taken to ensure the optimum conservation and utilization of the region's abundant resources.

Acting on these recommendations, DIAND began, in the fall of 1979, a comprehensive regional study with a Steering Committee and Working Group drawn from five federal departments and the Government of the Northwest Territories. A data base summarizing all relevant, physical, environmental and socio-economic data as well as information on present and future activities was assembled by the Working Group in data atlas and background reports. A synthesis of this information and an analysis of the issues bearing on regional planning, was produced in the form of a Green Paper, released by the Minister, DIAND, in July, 1982. A final public review phase was begun in January and February 1983, with meetings with the councils and the general public of Arctic Bay, Grise Fiord, Pond Inlet and Resolute.

Review 1983-84

A workshop held in Pond Inlet in June 1983 and attended by representatives of the four communities, native and conservation organizations, industry and government, completed the final public review phase of the Study.

This public review provided a forum for the concerned public to respond to the Green Paper, and to set the stage for the implementation, within the framework of the Northern Land Use Planning Policy, of land use planning for the region. The final report on the public review phase is expected to be released by the Minister early in 1984.

Plans 1984-85

The initiation of a comprehensive land use planning process for the Lancaster Sound region has been accorded high priority by DIAND within the overall implementation of the Northern Land Use Planning Program in the NWT.

Effective participation by residents will be an integral component of the initiative. The findings of the Lancaster Sound Regional Study and the data base asembled by the interdepartmental working group, will be of key importance to the evolution of a land use plan for the Lancaster Sound region, acceptable to the major interest groups.

Northern Environmental Protection

Economic Function: Economic Development - Other

Responsibilities

The Directorate coordinates, develops and recommends policies, strategies, plans and regulations for environmental protection in the Yukon and the N.W.T. and in the adjacent offshore regions. Managing an applied northern environmental research program and sponsoring other applied research to support this role, the Directorate also develops and implements policies concerning environmental impact assessment of northern development projects and implements the Federal Environmental Assessment and Review Process within the Northern Program.

Protection of the Environment Through Applied Research and Related Functions

Review 1983-84

Management of most of the applied research supported by the Directorate remained with the ALUR[1] program. The extensive data on nutrient loading of northern lakes is still being analyzed and a Eutrophication Manual is being drafted to guide management of lakeside developments.

Two of the three uranium-related studies are being completed this year. One study is to establish pre-mining background data on the distribution of radionucleides occurring naturally in the vegetation, soils and sediments adjacent to, and far removed from mineralization in the Eastern Keewatin. The otherstudy focussed on the distribution processes and patterns of radionucleides and heavy metals in the lichen-heath vegetation community in the same area.

[1] Arctic Land Use Research

The last uranium-related project is to develop a predictive hydro-geologic model to determine the effects of uranium (or other) mine tailings on the thermal regime of the terrain in a permafrost environment.

An interdepartmental study to evaluate sediments and sedimentary processes in the Beaufort Sea was again financially supported. This work is vital to the assessment of offshore hydrocarbon exploration and development activities and likely concomitant exploitation of granular resources necessary for artificial islands.

Financial support and project management was again provided for the investigation of the impact of ice-breaking ships on whales. Severe ice conditions provided an excellent opportunity to monitor the sound production of an ice-breaker and ore carrier and to observe the reactions of several species of marine mammals.

Two wildlife harvesting studies were continued and supportive funding again provided. DIAND coordinates the funding of these studies and each has produced its first technical report.

The series of Ecological Bibliographies on the Arctic Islands Archipelago was terminated at Vol. 11 and a cumulative index prepared. Publication of the last volume and the index is planned for 1984/85. Participation in the interdepartmental Baffin Island Oil Spill (BIOS) project continued through the BIOS Management, Technical Committee and through the completion of the department's field program. A report summarizing DIAND's Study of the uptake and depuration of dispersed oil in selected invertebrates will be publisned by the BIOS project office. The department will be contributing to the publication of the issue of Arctic which summarizes the findings of the BIOS project as a whole.

Participation continued in the Arctic Marine Oil Spill Program (AMOP) and the last of the Eastern Arctic Marine Environment Studies (EAMES) integrated reports were published.

A study of the distribution of phytoplankton in the Western Arctic was begun. This work will provide the information required for the future management of bowhead whales.

A major interdepartmental interdisciplinary study, the Beaufort Environmental Monitoring Program, was begun. This study will develop a monitoring program in the Beaufort, should hydrocarbon development proceed there. Reports on the first year's work have been prepared.

A field study was conducted on the potential use of flocculants in the placer mining industry (Yukon) to help establish a basis for their possible full scale use in meeting proposed guidelines for suspended sediment in placer mining effluent water.

A one-day workshop was held on sumps-drilling fluid disposal to determine the "state of the art", exchange views between industry, researchers and regulators and provide direction for future initiatives.

A research project was initiated to determine the toxicity to fish of thiocyanates (a by-product of gold ore processing).

Plans 1984-85

It is hoped that final reports on all studies completed in 1983/84 will be published during 1984/85.

The computer model on the effects of mine tailings on a permafrost environment will be completed and used to evaluate possible tailings disposal strategies.

Work will continue on the Beaufort Sea Environmental Monitoring Program, the effect of ice-breakings ships on marine mammals, and on wildlife harvest studies.

A study to help bridge the gap between laboratory experiments and field use of flocculants to improve water quality in placer-mined streams, will begin.

Synthesis of completed research on drilling fluid disposal in permafrost regions and on terrestrial oil spills will be done with dual objectives of education and transfer of results to regional regulators and the identification of knowledge gaps and future research direction.

In February 1984 DIAND Minister, John Munro, announced a revised $130 million federal planning and research program which will provide a significant boost to social and environmental research in the Canadian Arctic. The Northern Oil and Gas Action Plan (NOGAP) is proposed as a seven year program to allow government preparedness for future arctic oil and gas production. The program's overall management and approximately 15% of the total funds will reside with DIAND, while the remaining research will be carried out by the appropriate federal departments and territorial governments.

Environmental Assessment Division
Offshore Environment Division

Protection of Environment through Impact Assessment and Related Functions

Both Divisions participated in the evaluation of interventions from other departments, in the proponent's deficiency statement and in the public hearing sessions for Beaufort Sea Environment Impact Assessment. Staff were called upon by the Panel to present expert testimony in departmental research efforts. Assessment staff conducted review of RERC screening and provided input into preliminary project design for the North Canol Road project. Screening of Panarctic's Bent Horn Project began.

A review of issues relating to harbour sites for the Beaufort Sea was begun. Sites such as Stokes Point, King Point and small development projects were reviewed for environmental significance. The Assessment Division examined issues re Yukon placer mining environmental guidelines development: evaluation of guidelines through public hearing process; advice within NAP on environmental implications of recommendations from public review committee; negotiation with DFO and DOE on government position.

Advice and policy formulation activities continued for native wildlife harvest studies, placer mining guidelines, and environmental assessment aspects of northern development projects. The divisions provided advice and recommendations on terms and conditions for environmental requirements for the Norman Wells project, and provided advice and input into the development of a project monitoring program.

A review of the procedures for the implementation of EARP within the Northern Program was conducted. This included a review of the FEARO Cabinet memorandum on EARP, and consultations with outside agencies leading to the preparation of a draft brochure clarifying and updating screening procedures for EARP in the Northern Program. Within a public registry, documentation of status within the EARP process of proposed developments in the North was maintained.

NAP input to the Canadian Climate Program was coordinated. The divisions participated extensively in a study to evaluate the potential for use of flocculants in the Yukon placer mining industry.

The divisions coordinated 1) the Northern Program's participation and other government departments funding of Native Wildlife Harvest Studies in the Keewatin and Baffin Region of N.W.T. and 2) the Northern Program's input into the negotiations on establishing a Porcupine Caribou Management Agreement.

The Offshore Division participated in environment consultative committees, Kativik Environmental Advisory Committee for northern Quebec, Hudson Bay Oil and Gas committees and APPWG.

The Offshore Division participated in interdepartmental research exercises and joint government industry research projects through staff involvement with AMOP, BIOS, ESRF technical committees and field projects.

Continued advice and assistance was provided to regional and other inter-departmental review committees. An inter-governmental Polar Bear Contingency Plan was developed.

The Division developed a policy on the use of oil based muds for oil and gas exploration and production activities North of 60°.

Environmental Assessment Division

Plans 1984-85

The Norman Wells development and the North Canol Road projects will be monitored to improve the environmental assessment process and to develop suitable environmental protection standards.

Advice will be provided to headquarters and the regions on native wildlife harvest studies, placer mining and other activities.

Offshore Environmental Division

Plans 1984-85

The Offshore Division will continue to analyze and assess the environmental impacts of minor and major offshore industrial developments and will concentrate on the implementation of the FEARO panel recommendations for the Beaufort Sea Hydrocarbon Development.

The Division will continue in its advisory role to a number of inter-departmental advisory committees and joint industry/government working groups concerned with offshore environmental protection.

Environmental Studies Revolving Fund

Responsibilities

The Environmental Studies Revolving Fund (ESRF), established under Section 49 of the Canada Oil and Gas Act (1982), provide funding for environmental and social studies related to oil and gas activities on Canada Lands. The studies are financed entirely from levies imposed on interest owners/holders on Canada Lands. Two funds are established under the Act, one for the areas North of 60° and administered for the DIAND Minister by the Northern Affairs Program and one for the south administered for the Minister of EMR by COGLA. There is a government-industry Advisory Board for each fund. The Northern ESRF Advisory Board is chaired by the Director-General, Northern Environment and the day-to-day management of the Fund is the responsibility of the Director, ESRF (IAND) who also serves as Executive Secretary to the Board. He is supported by joint government-industry Program Study Committees of technical experts appointed for the various subject areas.

Review 1983-84

The Environmental Studies Revolving Fund (IAND) became operational during this period and progress in establishing the Fund was rapid following Treasury Board approval in February 1983.

Highlights include:

- Publication of the final Regulations in Part II of the Canada Gazette outlining the 8 Prescribed Regions of the ESRF (IAND);
- Establishment of levies and billing the oil and gas interest owners/holders to finance the Fund;
- Recommendations by the ESRF Advisory Boards of Priority Subject Areas for study and a budget for the northern Fund for 1983 were approved by the Ministers in August 1983.
- Publication and distribution of Guidelines for Study Proposal, and Payment from Funds; and completion of the financial procedures for the Funds;
- Establishment of Program Study Committees for the Environmental Studies Revolving Funds;
- Publication of the first call for Study Proposals in "Update" (September 16, 1983) with a 30-day deadline for submission;
- Evaluation of 138 Study Proposals received by the two Funds and selection of 24 successful applicants was completed by the 1st. week of December 1983.

The ESRF (IAND) contributes to 21 of the 24 studies for 1983 and $747,000 has been committed for 1983 studies. Included in this total are seven studies (valued at $211,300) related to oil spill research and countermeasures, including four projects under BIOS (Baffin Island Oil Spill) program. Three of the studies were previously funded by the Canadian Offshore Oil Spill Research Association (COOSRA) and support was continued by ESRF.

A second request for study proposals was published in "Update" on February 23, 1984.

Plans 1984-85

The ESRF Management will complete the second round of study selections for 1983. Study requirements and a budget for 1984 are being identified for final approval by the Minister in May. The 1984 levy determination will be calculated in mid-May and a further request for study proposals will be issued in mid 1984. Several studies will be completed and the results published.

Northern Resources and Economic Planning Branch

Mining Management and Infrastructure

Economic Function: General Government Services

The Mining Management and Infrastructure Directorate is comprised of three Divisions: Mineral Policy Division, Mining Administration Division and Infrastructure Division. The Directorate is responsible for functions similar to provincial departments of Mines and Transportation. The Directorate formulates policies; drafts legislation and regulations to promote orderly management and development of mineral resources in the NWT and Yukon; assesses the technical, economic, financial and social impacts of mineral projects and liaises with the mining industry and other interested parties. In the field of transportation, it evaluates needs for roads and airstrips, in support of economic development in the North. The Directorate provides functional direction to DIAND regional offices and advises senior federal and Territorial officials, as well as the mineral industry, labour and Native organizations, on all mineral related matters; and carries out mining administration functions.

Mineral Policy Division

Responsibilities
The Mineral Policy Division develops policies to encourage exploration and orderly development of mineral resources in northern Canada; carries out short-term and in-depth studies of the economic and financial aspects as well as the socio-economic impacts of mineral development; monitors mining projects to ensure that government objectives, as stated in the agreements with industry, are achieved; conducts basic research on mineral issues; and provides advice to senior management on the development of non-renewable resources in the North.

Review 1983-84
Depressed world markets and low metal prices continued to affect the northern mineral industry into 1983 but some improvement was apparent as the year progressed. Cyprus Anvil's Faro mine in Yukon re-opened in June after an agreement was reached between Dome Petroleum/Cyprus Anvil and the Federal Government on the joint financing of a $50-million mine re-opening plan. The plan involves a two-year stripping program designed to improve the long-term viability of the mine but no concentrate will be produced. The plan is providing employment for about 240 people and has helped to stimulate the Yukon economy.

Under the agreement, the federal government will provide approximately $4 million through existing programs under Section 38 of the Unemployment Insurance Act and the NEED program in addition to a $19.6 million interest-free loan to the end of 1984. The Yukon Territorial Government is also providing approximately $1 million in additional wage top-up. A Monitoring Committee composed of IAND and YTG members established under the terms of the agreement, is reviewing implementation of the stripping program and company efforts at disposition and reactivation of the mill. A Cnadian Transport Commission study, underway at year end, is examining the costs and problems of Yukon transportation, with emphasis on the requirements of Cyprus Anvil.

The Pine Point mine recommenced operations in June after being shut down since January 2, 1983. Mine re-opening was achieved after Cominco negotiated a package of concessions in co-operation with its unions, the railway and its smelter in return for a commitment to operate the mine/mill complex for a minimum of at least five months. Federal Government officials from CEIC, IAND and EMR were involved in the negotiation of some $4.0 million in financial assistance to the company, under Section 38 of the UI Act and the NEED program, for an advance stripping program.

The Government of the Northwest Territories also provided supplementary wage top-up assistance in the amount of $1.1 million.

Renewed emphasis was placed on the development of a northern mineral policy following resolution of the Cyprus Anvil and Pine Point mine closures, which had absorbed most of the Division's resources for almost a year. Efforts were concentrated on the assessment of the role of mining in the northern and national economies as well as the competitiveness and outlook for the northern mineral industry. Formulation of the policy will require consideration of the diverse, complex inter-relationships which affect norther mineral development. As part of the ongoing consultation, which has been an important element in the policy development process, a series of eight mineral policy issue papers will be released in 1984. Each paper will provide a data base and a concise discussion of one key policy issue.

The Division provided support to the Director of the Mining Management and Infrastructure Directorate both in his capacity as Chairman of the Nanisivik Monitoring Committee and as the Federal Government representative on the Nanisivik Board of Directors. An analysis to examine possibilities for increasing native employment at the mine was completed by the Monitoring Committee. As a result, a Federal/Territorial working group was established to develop practical steps to employ more native people in mine operations. Monitoring of other mine operations, including the Polaris and Cadillac projects, continued during the year.

Mining Administration Division

Responsibilities
The Mining Administration Division, Headquarters, develops policy related to the regulation of the Northern Mineral Industry, which includes providing for the consultative process with industry and initiating the drafting of appropriate acts and regulations relating to the administration and disposition of mineral rights in the Yukon Territory and the Northwest Territories. The Division administers the royalty provisions of the Yukon Quartz Mining Act, Canada Mining Regulations and Territorial Coal Regulations and advises various government agencies on current and proposed exploration and mining developments. It maintains a microfiche library of assessment reports, geological reports and other mineral resource information. The Division comprises the Mining Lands Section and the Mining Resources Section in Ottawa and provides functional direction to IAND regional offices.

Mining Lands Section
The Mining Lands Section develops policies and initiates the drafting of appropriate legislation relating to the administration and disposition of mineral rights including royalties, in Yukon and the Northwest Territories.

The Mining Lands Section drafted proposed amendments to the Canada Mining Regulations and is in the process of arranging final legal drafting by the Department of Justice of a proposed revision to the Territorial Coal Regulations. The Section contributed the background paper, Northern Mineral Legislation, to the Northern Mineral Policy series. This paper describes existing northern mining legislation and indicates what changes may be desirable.

Mining Resources Section
The Mining Resources Section maintains a microfiche library on all published geoscientific reports and unpublished assessment reports on mineral properties in Yukon and the Northwest Territories. The prime concern of this office is the assessment and definition of regional mineral potential for specific commodities and for areas in the Territories relating to proposals concerning land use, parks, land claims, transportation routes and power developments. This Section and the Mining Administration Division as a whole inform and advise the Minister on current and proposed mine and exploration developments in the North. Monthly Mines and Mineral Statistics and annual Mines and Mineral Activities reports are produced by the Mining Resources Section for use by the mining industry, public and government. The Section maintains a public microfiche library of released mining assessment or representation work reports covering northern mineral properties, company files and published material concerning mining companies operating in the North. The Section maintains the Department's contribution to GEOSCAN, the Canadian bibliographic mining properties computer access file.

The Mining Resources Section produced the first background paper in the Northern Mineral Policy Series entitled Mines and Important Mineral Deposits of the Yukon and Northwest Territories, 1982. The report provides an overview of mineral deposits in the North, their geological environments and origins.

Regional Branches - Yukon and Northwest Territories

The Yukon Region Branch and Northwest Territories Region Branch of the Northern Affairs Program are major functional groups under the direction of regional Directors General. The Regional Branches administer the mandate of the Program within the respective Territories. Offices are centered at Whitehorse, Y.T. and Yellowknife, N.W.T.

The Regional Branches have the following sub-units: The mining Recording Section, The Geological Services Section, and The Mine Inspection Section (Yukon Region only).

Mining Recording Section
Mining Recording Offices maintain complete recording systems of mineral rights in both Territories. For administrative purposes, the Territories have been divided into seven mining districts. A mining recording staff is responsible for the administration and disposition of mineral rights within each district in accordance with applicable legislation. There is a Manager, Mineral Rights in each Territory whose principal function is to ensure that uniform practices are followed in the mining recording offices and that these offices are operated in accordance with the legislation.

Geological Services Section
Geological Services Section provide a geological services to the mineral industry in both Territories. Offices are maintained at Whitehorse and Yellowknife. Two core libraries, the H.S. Bostock Library in Whitehorse and the C.S. Lord Library in Yellowknife preserve diamond drill core and provide facilities to study core and rock samples.

Each office has a large geological library of published and unpublished (assessment work) reports in hardcopy and microfiche format.

Officers of Geological Services Sections in both territories conduct bedrock geological mapping surveys and mineral occurrence investigations. Prospecting courses are taught in various communities each year by the geological staff. Members of the staff advise the mineral industry, government departments and research scientists on geological and exploration matters.

Mine Inspection Section
In the Yukon, the Mine Inspection Section, with an office at Whitehorse, gives advice on the Mining Safety Ordinance and Mine Safety Regulations of the Yukon Territory. It also prepares new safety legislation when required. A regional mining engineer with a staff consisting of a district engineer, an electrical-mechanical engineer, an environmental engineer, a mine rescue superintendent, a claims inspector and a clerk, are responsible for the following: inspection of mines, quarries and blasting operations to ensure compliance with safety legislation; inspection of mineral claims to ensure compliance with safety legislation; and inspection of mineral claims to ensure compliance with the Yukon Quartz Mining Act and the Yukon Placer Mining Act.

Northwest Territories

Mineral Production
Mineral production in the Northwest Territories during the calendar year 1983 was valued at $532 million compared with $468 million in 1982. Despite the increase in mineral production value, the continuing economic recession and concomitant low prices for base metals and tungsten combined to make 1983 a difficult year for some mines and mining communities in the Territory. Gold production remained the bright spot in the industry, with a 67 per cent increase of production value from $91 million in 1982 to $153 million in 1983. The value of tungsten production (WO_3) declined by $24.6 million because of the ten month shutdown of Canada Tungsten's tungsten mine and mill at Tungsten.

Eight mining companies treated ore from 11 mines at 10 milling plants. Falling lead and zinc prices forced Pine Point Mines Ltd. to shut down on January 2, 1983. However, the mine resumed operation on June 15, 1983. Similarly, uneconomic tungsten prices forced Canada Tungsten Mining Corporation Limited to shut down its Cantung mine and mill operation at the end of January 1983.

The mine resumed production on November 28, 1983. Gold production was reduced at the Cominco's Con Mine because of a strike that lasted from mid-July to mid-September, 1983. Giant Yellowknife Mines Ltd. reduced gold ore production by 25 per cent at the end of the first quarter in order to obtain a more complete recovery of the indicated mineral inventory.

On the positive side, both Echo Bay's Lupin Mine and the Cullaton Lake Mine increase their gold production. Echo Bay Mines Ltd. increased mill capacity by 20 percent from 900 to 1100 tons per day. Cullaton Lake Gold Mines Ltd., following a successful production year, plans to increase mill capacity to approximately 360 tons per day in 1984 to accommodate ore production from its new Shear Lake Mine. Also, Giant Yellowknife Mines Limited commenced gold production from the Salmita Mine in August, 1983. Ore from Salmita was milled at the rehabilitated Tundra mill, 3 km to the south of the Salmita Mine. Terra Mines Limited, after a two-year period of limited production but intensive underground development and exploration, doubled the capacity of its Camsell River silver mill from 225 to 500 ton per day. In the High Arctic, operations at the two zinc-lead mines, Polaris and Nanisivik, continued successfully during the year despite low lead and zinc prices.

Production from the three lead-zinc mines increased 7.1 per cent for lead and 4.7 per cent for zinc compared with the previous year not withstanding the fact that Pine Point Mines Limited was closed for six months.

The mineral industry of the Northwest Territories accounted for 96.9 per cent of the tungsten, 26.5 per cent of the lead, 23 per cent of the zinc, 12.9 per cent of the gold and 4.6 per cent of the silver produced in Canada during 1983. This production accounted for 6.5 percent of the value of Canadian metallic mineral production compared with 5.6 per cent in 1982.

The operating mines and mills employed 2,369 persons at the end of December, 1983. Of the 765 employees laid off through the closing of the Pine Point and Canada Tungsten mines, some 662 were re-employed when the mines reopened later in the year.

Development

At year end 1983, Cullaton Lake Gold Mines Ltd. moved forward with pre-production development of the Shear Lake gold mine located some 5 km north of the Cullaton Lake Mine. A decline was driven through seven gold bearing zones and drifts were extended from the decline toward the main shear zone, which is the production target zone.

At Cominco's Ptarmigan Mine, 20 km by road northwest of Yellowknife, ramping, drifting and bulk sampling were conducted. Despite encouraging results, a production decision was postponed because the Con mill was operating at capacity to process ore from the Con mine.

Cadillac Explorations Limited's base metal-silver property, at Prairie Creek, on which a mine and mill construction was near completion during 1981, was placed on hold in mid-1982 without achieving initial production. At year end 1983, no new developments were apparent which would bring the mine into production during 1984.

In July, Terra Mines Limited proceeded with development on its Bullmoose gold property, 80 km southeast of Yellowknife. The company hopes to prove sufficient reserves to bring the property into production.

Positive signals in the gold mining sector are the successful 1983 operations at relatively new mines, namely Echo Bay's Lupin and Cullaton Lake's B-Zone gold mines and the continuing operation of the Con and Giant mines, at Yellowknife. In the longer term, Amax of Canada Limited is expected to bring its Mactung tungsten mine (17) on the NWT-Yukon border into production, perhaps during 1986 or 1987. The strengthening of zinc prices and marginal improvement in tungsten prices during the second half of 1983 indicated some metal market recovery, although market uncertainty continues.

Mineral Exploration

Mineral exploration expenditures continued to decline in 1983 to an estimated $18 million compared with approximately $22 million in 1982. Expenditures on gold exploration and gold property development amounted to about half of the total expenditure. Some $4 million was expended on exploration for base metals in the Pine Point District and near the Nanisivik Mine in northern Baffin Island. Expenditures on uranium exploration continued to decline and probably amounted to about $4 million.

In 1983, there were more gold exploration and mine development projects (53) than base metals projects (19) and uranium projects (25) combined. A total of 115 properties were explored.

Outlook

Exploration and development expenditures in the Northwest Territories declined marginally in 1983 to an estimated $18 million from the previous year. The shift from base metal and uranium exploration to gold exploration and development continued. The establishment of the Salmita gold mine as a new producer in 1983, was followed by Cullaton Lake Mine's decision to bring its Shear Lake gold mine into production in 1984 to augment gold output. Exploration and development work on Terra Mine's Bullmoose gold property has been encouraging and a production decision may be forthcoming in 1984.

Yukon Territory

Mineral Production

Mineral production in the Yukon Territory during the calendar year 1983 was valued at $59 million compared with $169 million in 1982 and $268 million in 1981. The drastic decline in mineral production value during 1983 resulted from the shutdown of all lode mines in Yukon during the first half of the year. The drop in value was the largest in percentage terms recorded among the provinces and territories of Canada. Gold production from Yukon placer gold mines was the leading sector accounting for $50.5 million or 85 per cent of the total mineral production value of $59.4 million.

Whitehorse Copper Mines Ltd. closed permanently at the end of 1982 because of ore reserve depletion. Cyprus Anvil Mining Corporation's Faro Mine closed in June, 1982 and reopened in May, 1983 to commence an overburden stripping program. This program which is expected to result in mill production of lead and zinc concentrate by late 1984 or 1985, once issues related to rail transportation and hydroelectric power contracts are resolved. At year-end rising zinc prices provided optimism for the recommencement of zinc and lead concentrate production at Cyprus Anvil's Faro Mine. United Keno Hill Mine's silver operations reopened at a 25 per cent reduction in production rate in August, 1983, after being shut down since July, 1982.

Two new small producers mined high-grade silver veins. Springmount Operating Company produced 70.7 tonnes of ore at its Mount Keno property in the Keno Hill area and Dawson-Eldorado Gold Exploration Ltd. produced 454 tonnes at its PLATA property.

The Yukon accounted for 43.3 per cent of the gold, 1.6 per cent of the silver, and 0.2 per cent of the lead produced in Canada in 1983. Yukon mineral production value declined to 0.8 per cent of the value of total Canadian metallic mineral production in 1983 compared with 2.45 per cent in 1982.

At year-end 1983, the two operating lode mines, Cyprus Anvil and United Keno employed 372 persons compared with 1 030 persons employed at the Yukon's three operating lode mines during the first half of 1982. An estimated 750 persons were seasonally employed in placer mining operations during 1983. In addition some 18 persons were seasonally employed in three underground placer gold mines and 40 persons were employed seasonally in exploration development and production in small-lode underground mines.

Placer Mining

Gold production from Yukon's 260 placer mine operations increased 25 per cent in 1983 to 2 932 kg (94 258 troy oz) of crude or impure gold compared with 2 290 kg (73 641 troy oz) in 1982. Statistics Canada reported an additional 76 kg of placer gold which was sold to Yukon jewelry manufacturers or forwarded to gold refineries in 1983.

A public review of the proposed Yukon Placer Mining Guidelines was conducted by the Public Review Committee. The hearings were held in the major Yukon placer mining communities, during 15 days from Sept. 7 to Nov. 8, 1983. The Committee invited and heard virtually every interest group in the Yukon and over 150 presentations and submissions were received. The Committee submitted its final report with recommendations on the issue to the Minister of Indian and Northern Affairs and his colleagues, the Minister of Fisheries and Oceans and the Minister of Environment on January 17, 1984. The Minister of IAND noted at that time that further discussions would take place before any substantive comment was made.

Mineral Exploration

Mineral exploration expenditures continued to decline during 1983 to an estimated $11 million compared with $22 million in 1982 and $50 million in 1981. The year was characterized by low levels of property work. The most active areas were in the Wheaton River area, south of Whitehorse, for gold-silver deposits, and in the Rancheria area west of Watson lake, for shale-hosted silver-lead-zinc.

During 1983, 68 properties were explored, of which 25 were explored for precious metals, 22 for lead and zinc, 13 for molybdenum or tin, 10 for tungsten and four for copper.

Outlook

Prospects for 1984 remain uncertain as improved zinc, lead, tungsten, and silver prices are required to bring full recovery and renewed growth to the lode mine industry. Beyond future capacity production of zinc and lead concentrate at Cyprus Anvil's Faro Mine, the most important large scale project on the horizon is the development of Amax of Canada Limited's Mactung Mine. This $171 million mine and mill project on the NWT-Yukon broader could be on stream by late 1986 or 1987, at an initial scale which will depend on world tungsten prices and demand. Technical and engineering studies are continuing. A production decision could be made as early as mid-1984 if tungsten markets show sufficient signs of recovery.

The issue of amendment and possible implementation of the Federal Government's draft (proposed) Yukon Placer Mining Guidelines, governing water use in Yukon placer mining operations is expected to be resolved in 1984.

Infrastructure Division

Economic Function: Transportation

Responsibilities

The Northern Infrastructure Division is responsible for developing and implementing policy and for the planning and construction of transportation infrastructre required to stimulate and serve resource developments and intercommunity needs of the two territories. In the planning, directing and co-ordinating of the Northern Roads Program, special emphasis is placed on the socio-economic, financial, environmental and technical considerations in the construction of new roads. The responsibility for maintenance and management of roads has been transferred to the territorial governments.

Review 1983-84

A new Northern Roads Policy together with a five-year capital plan was approved by Cabinet on July 7, 1983. This new policy clearly puts the control of policy, planning and construction with the Federal Government for all new major road construction and inter-territorial road construction.

The five-year capital plan is based on an annual budget of $19.3 million and will allow completion of all projects that have been started and the implementation of new projects such as the reconstruction of the North Canol Road and the completion of the section of the Mackenzie Highway between Fort Simpson and Wrigley.

Liard Highway: With the exception of some minor clean up this project has been completed. The road is scheduled to be officially opened in June 1984 and will provide a link between Fort Nelson, B.C. on the Alaska Highway and Fort Simpson, NWT on the Mackenzie Highway.

Dempster Highway: Funding under the Special Recovery Capital Projects Program was approved. This provided an additional $2.6 million in 1983/84 and a further $5.3 million in 1984/85. This will allow completion in 1987, two years earlier than originally planned.

Reconstruction of km 0-125 at the southern end of the highway was commenced in 1983/84. Work on the more northerly section included gravel surfacing, new structures and improvements to ferries and river crossings.

A study of the volume and type of traffic using the Dempster Highway was begun. Present traffic includes vehicles in support of the oil and gas industry and for the resupply of Inuvik, Fort McPherson and Arctic Red River. The volume of tourist traffic in the summer is significant.

Carcross-Skagway Road. Apart from some final surfacing the British Columbia Section of the highway was completed in 1983. The section between the Alaska Highway and Carcross was selected for accelerated construction under the Special Recovery Capital Projects Program. Several contractors carried out construction during the year. The road should be completed in 1985/86.

Mackenzie Highway (Fort Simpson to Wrigley). Final design work for this section of the Mackenzie Highway was completed in 1983/84 in preparation for construction starting in 1984/85. A training plan to enable local people to gain skills through work on the road has been developed in co-operation with C.E.I.C.

North Canol Road. Planning for the reconstruction of sections of the North Canol Road was continued so that upgrading of the worst sections could begin in 1984/85.

Studies. Two benefit-cost studies were carried out in support of road projects. The study of the reconstruction of the road between Carcross and the Alaska Highway showed that the benefits of an upgraded road through savings in travel time, lower road maintenance costs, improved safety and lower vehicle maintenance and operating costs justified the construction cost. The second study supported the extension of the Mackenzie Highway to Wrigley.

Work continued on the analysis of the Cyprus Anvil mine's transportation requirements. This included working closely with the Canadian Transport Commission which is conducting an inquiry into Yukon transportation. The preliminary report was assessed, discussions were held with the various players involved and comments were submitted to the Inquiry Team. A final report and recommendations are expected to be released in early April, 1984.

An Infrastructure Strategy paper was one of a series of papers prepared in the development of a Northern Mineral Policy. The paper summarizes government's previous participation in the provision of infrastructure in support of the mining sector and considers how government can participate in the future.

Air Facilities Policy. A joint memorandum to Cabinet was prepared with Transport Canada, seeking Cabinet approval for a six year extension to 1990 of the Arctic Air Facilities Policy. Approval of the policy has yet to be given.

Plans 1984-85

Arrangements have been made for the official opening of the Liard Highway in June 1984. Work will continue on the Dempster Highway, Mackenzie Highway and the Carcross-Skagway Road and will commence on the North Canol Road. Proposals for new access roads to promising mineral resource locations will be processed.

Benefit/cost studies in support of an extension of the Mackenzie Highway to Norman Wells and the proposed Inuvik-Tuktoyaktuk road will be conducted.

The transportation requirements of the Cyprus Anvil mine will have to be resolved taking into consideration the impact on the White Pass and Yukon railway and the long term transportation needs of the Yukon Territory.

Cabinet approval of a renewal of the mandate provided by the Arctic Air Facilities Policy will continue to be sought and program implementation will continue once the Policy is approved.

A review will be undertaken of the Northern Resource Roads Program with a view to increasing the levels of federal financial assistance available. A study of cost-sharing/cost recovery for development roads in accordance with the requirements of the Roads Policy will be carried out.

DIAND and the Government of Yukon will carry out a study of a Yukon based regional air carrier.

Oil & Gas Management and Major Projects Directorate

Economic Function: General Government Services

The 1982 Northern Affairs Program reorganization resulted in the amalgamation of responsibility for the management of northern oil and gas project development under the Oil & Gas Management and Major Projects Directorate.

This Directorate is comprised of three divisions: Oil and Gas Policy, Oil and Gas Operations and Project Development.

The Directorate is responsible for the management of oil and gas resources in the Yukon, the Northwest Territories and adjacent offshore through the development and implementation of policies, legislation, plans and procedures designed to encourage and provide for the orderly exploration, development, production and conservation of northern oil and gas resources and through the coordination of the development of major projects in the North to provide an orderly and manageable broadening of the northern economic base of the two territories.

The Oil and Gas Policy and the Oil and Gas Operations Divisions are responsible for providing program and policy liaison with the Canada Oil and Gas Lands Administration (COGLA) and between COGLA and the Territorial Governments, coordinating input required under the Canada Oil and Gas Act relating to socio-economic and environmental conditions, direct on-going consultative processes with the oil and gas industries and other interested parties in relation to northern resource development.

The Directorate is also responsible for the management and administration of the Norman Wells oil field under the 1944 Proven Area Agreement. The field produces some 1,000,000 barrels of oil per year to supply petroleum products consumed entirely by residents in the Western Arctic. Upon completion of the pipeline currently under construction and with enhanced productive capacity, the field will deliver some 25,000 barrels of oil per day to southern markets in mid-1985. The refinery for local products will continue in operation.

Project Development Division

Responsibilities
The Project Development Division coordinates government activities related to the planning, assessment, implementation and monitoring of major northern non-renewable resource development projects, to facilitate the development of major projects in the North.

Review 1983-84
The Division coordinated the government's assessment of two industrial proposals for development on the Yukon's North Slope. Gulf Canada Resources Inc. applied to the Department for permission to construct a facility at Stokes Point to provide services to support their hydrocarbon exploration program in the Beaufort Sea. Peter Kiewit Sons' Co. Ltd. requested permission to develop a quarry and port near King Point to supply rock to construct artificial islands for hydrocarbon exploration and development in the Canadian and American Beaufort. Both proposals were rejected, for the time being, by the Minister of Indian Affairs and Northern Development on November 7, 1983 so as not to jeopardize progress on unsettled land claims.

Early in 1984, Panarctic Oils Ltd. applied to government to produce modest quantities of oil from the Bent Horn oil pool (located on the southwest sector of Cameron Island, NWT) and deliver it to market once a year during the open water season by ice strengthened tankers. The Division initiated action to coordinate government activities required to respond to this proposal. In addition, the Division was involved in the coordination of government activities related to:

- a proposal by Borealis Exploration Ltd. to develop an iron ore mine on Melville Peninsula, N.W.T.;
- a proposal by Amax Northwest Mining Company Limited to develop its Mactung Mine - a tungsten deposit on the N.W.T. - Yukon border; and
- the Slave River Hydro Project located on the N.W.T. - Alberta border.

The Division developed operational procedures to apply to the coordination of the Review and Assessment of Major Projects (the RAMP Process). The Process governs the coordination of the activities of goverment which are needed to assess and implement industrial development projects in the North and to provide an effective framework for policy input to the assessment and implementation of such projects.

Plans 1984-85
Assessment and coordinating activity with respect to current and future northern project proposals will continue. For example, it is expected that Polar Gas Ltd. will file applications with the Department and the National Energy Board in June, 1984 requesting approval to construct a pipeline for the transport of natural gas from the Mackenzie Delta, N.W.T. to southern markets.

Senior Advisory and Review Board Secretariat

Responsibilities
The Secretariat oversees the implementation of the government's northern hydrocarbon development strategy and coordinates the Northern Oil and Gas Action Program (NOGAP). The two elements of the northern hydrocarbon development strategy announced by the federal government in 1982 are as follows:

- northern hydrocarbon production, when it occurs, will be allowed to proceed in a phased manner by initially developing proven commercial reserves on a small-scale demonstration basis, subject to normal regulatory and review processes; and
- socio-economic, environmental and technical planning and research by the federal and territorial governments will be accelerated through a Northern Oil and Gas Action Program (NOGAP) to support policy and regulatory responsibilities and to achieve a state of government preparedness for large-scale northern hydrocarbon production.

Review 1983-84
On February 23, 1984, the federal government announced that it had allocated $130 million for the Northern Oil and Gas Action Program as the cornerstone of the northern hydrocarbon development strategy. The Program is based on the possible transportation of hydrocarbons by small diameter pipeline up the Mackenzie River Valley or by year-round ice strengthened tankers eastward through the Northwest Passage in the early 1990's.

Plans 1984-85
In the first year of the seven year Northern Oil and Gas Action Program, the Secretariat will implement measures to coordinate the accelerated planning and research activities of the six federal departments and two territorial governments which are participating in the Program in 1984-85. Participants will commence specific environmental, socio-economic and technical planning and research activities under the Program as the resources to do so are approved by the Treasury Board of Canada within the allocations provided by the federal government for this purpose.

Northern Resources and Economic Planning Branch

Northern Economic Planning Directorate

Economic Function: General Government Services

The Directorate is composed of three Divisions - the Energy Planning Division, the Socio-Economic Agreements and Native Economy Division and the Economic Strategy Division.

Responsibilities
The Northern Economic Planning Directorate is responsible for the development, implementation and coordination of economic policies, programs and legislation in support of northern economic development, the formulation, negotiation and implementation of Economic Development Agreements with the territorial governments and the promotion of native economic development; the analysis, monitoring and coordination of the economic development process in the North; and the formulation of northern energy policies and programs, including the efficient use of energy resources.

Northern Energy Planning Division

Responsibilities

The Northern Energy Planning Division provides economic and financial advice on conservation, affordability and supply of energy in the North. It facilitates federal government regulatory approvals for the Northern Canada Power Commission (NCPC) and provides advice to the Minister on this Crown Corporation which is the major generator of electrical energy in Yukon and the Northwest Territories. In cooperation with the territorial governments, the Division administers federally financed energy subsidies to residents and small businesses located outside the territorial capitals of Whitehorse and Yellowknife, undertakes research, and develops policy options in conjunction with other federal government departments and agencies, on matters relating to the provision of energy North of 60°.

Review 1983-84

At the direction of the Minister, NCPC complied with the Administered Prices Policy of the federal government and limited its annual rate increase to 6%. Following review of options on the future role and mandate of NCPC, the federal government announced that the NCPC would continue to operate as a federal Crown Corporation utility in the North. Steps were taken to improve NCPC's rate setting practices by requesting the National Energy Board to review and institute a system of rates on rate base - rate of return method. To improve NCPC's responsiveness to northern needs, the federal government also decided to relocate NCPC's corporate office from Edmonton to Yellowknife and to increase the number of NCPC members from five to seven.

Steps will be taken to enhance the efficiency and accountability of the corporation. Direct energy subsidies to Northerners for the Federal Power Support Program, the Commercial Power Rate Relief Program and the Home Heating Oil Subsidy Program were continued in 1983/84 and approval from Cabinet was obtained to extend the three programs through 1984/85. Options for hydro site investigation funding were examined and studies on gas distribution in Yukon and NWT were developed with the Territorial Government and the Department of Energy, Mines and Resources. Various alternatives to the direct energy subsidies were analyzed. The Division cooperated with NCPC and Energy, Mines and Resources in analyzing small hydro proposals for study under the Remote Community Demonstration Program.

Plans 1984-85

The Division will expedite the implementation of decisions regarding the future role and mandate of NCPC including the relocation of the corporate head office to Yellowknife, the development of cost-based electricity rates following National Energy Board hearings in the North, as well as analysis and coordination of changes to the direct energy subsidy programs. It will prepare: draft legislation to amend the NCPC Act, proposals for the management of NCPC's debt, and a process of regulation of NCPC rates in the public domain. The Division will also carry out economic research on programs to promote long term energy conservation and alternative energy supply in Yukon and the Northwest Territories, continue to support in the selection of feasible renewable energy projects, and facilitate the federal government approval process for operating matters of the NCPC.

Native Economy and Socio-economic Agreements Division

Responsibilities

The Division develops policies and plans to provide maximum socio-economic benefits to all northern residents from economic development activity, by analysing proposed programs and projects, and developing and implementing mechanisms and procedures to ensure adequate consultation and involvement with northerners, creating opportunities for training, employment and local business development, and the minimizing of any adverse impacts. Special attention is paid to the needs of native residents.

Review 1983-84

The Division worked with territorial government officials, other federal officials and petroleum company representatives to complete the renegotiation of the northern benefits components for the Canada Benefits packages required under the Canada Oil and Gas Act (1982) and administered by the Canada Oil and Gas Lands Administration. Two regionally based Northern Benefits Committees were set up to facilitate and coordinate effective and timely regional input into the Canada Benefits plans. Extensive consultations and negotiations were undertaken with federal and NWT government officials leading to the signing, under the Economic Development Agreement (EDA) between Canada and the Northwest Territories, of three subsidiary agreements on human resource, natural resource and domestic market (tourism and small business) development. In Program funding over four years, 90% funded by the Federal Government and 10% by the Territorial Government will be $21 million. The NWT EDA is now fully operational with funds being provided to proponents for various economic development projects in the Territories. Under the coordination and direction of DIAND, much of the preparatory work for the Canada/Yukon EDA has been completed. The Agreement is supported by a Yukon Economic Development Perspective prepared in consultation with other federal government departments, Yukon Government officials and the Council for Yukon Indians. Subsidiary Agreements on Mineral Resource Development, Economic Development Planning, Renewable Resource Development and Small Business and Tourism are proposed for the Yukon EDA over a five-year period.

Numerous activities related to the development of the native economy were undertaken including the collection and review of northern native income and economic development data, the review and analysis of the economic structures elements of land claim settlement proposals in support of the federal negotiating teams, and the management of the financial assistance program for Northern Inuit Co-Operatives. Increasing attention was given to the problems faced by native development corporations and native businesses seeking to establish themselves in the North.

Plans 1984-85
The Division will assist the Northern Benefits Committees to monitor and revise the implementation of the Canada Benefits packages in the North as well as explore more effective techniques for ensuring that northern benefits from non-renewable resource development activities are increased. Planning activities related to major northern development projects will continue. Participation in the implementation of the NWT EDA will continue including the annual effectiveness review and the consideration of new subsidiary agreements. Implementation of the Yukon EDA is expected this year. There will be continued involvement in the planning and policy development activities related to native economic development with increased emphasis on the development of policies and programs which will afford a more coordinated approach in support of northern native economic development institutions. Effective this fiscal year, the Division will assume responsibility for the management of the direct loan, loan guarantee and contribution components of the Inuit Economic Development Program.

Economic Strategy Division

Responsibilities
The Economic Strategy Division has the following functions: to develop broad economic policies and strategies for northern economic development; to develop regional and sectoral economic policies for the two territories; to conduct special economic studies; and to develop and maintain a comprehensive, computerized data base for the northern territories. The Division works closely with the two territorial governments, northern interests groups and federal departments and agencies which are active in the North.

Review 1983-84
In connection with the federal-territorial economic development agreement process, the Division completed drafting of a Yukon Territorial Perspective, and began drafting a similar perspective of the Northwest Territories. It also began work on a broad review of the northern economy and an economic strategy appropriate to the 1980s, prepared a publication on suggested guidelines for Beaufort oil and gas development, worked on a study of the requirement for macro-economic modelling within the Branch, and studied the question of the subsidization of the northern economy. As a priority, work was begun on the development of a comprehensive northern information base.

The Division also initiated a Northern Food Cost Study, studied the implications of the options of building townsites near mineral resources vis-à-vis the provision of infrastructure for fly-in/fly-out operations and assisted in the development of program material for a future Yukon Economic Development Agreement.

Plans 1984-85
Primary tasks will include:

Completion of a northern economic strategy and background paper; continue monitoring the economies of the Yukon and Northwest Territories; completion of a comprehensive study of northern food costs; work toward the development of a data system; completion of a number of economic studies and provision of information, analyses and advice within the Northern Program with respect to northern economic issues.

Canada Oil and Gas Lands Administration (COGLA)

Economic Function: General Government Services

COGLA administers and regulates petroleum activity on the Canada Lands. This area encompasses 6.4 million square kilometres in the Yukon, the Northwest Territories and other areas north of 60 degrees latitude, which are under the jurisdiction of the Minister of Indian Affairs and Northern Development, as well as another 3.8 million square kilometres off the East and West Coasts, under the jurisdiction of the Minister of Energy, Mines and Resources. COGLA's authority comes from two statutes: The Canada Oil and Gas Act, which provides it with broad regulatory authority on the Canada Lands; and the Oil and Gas Production and Conservation Act of 1979, which gives it authority to regulate drilling and other exploration operations.

At headquarters in Ottawa, COGLA is divided into six branches, which have administrative, regulatory and policy responsibilities in virtually every area of hydrocarbon activity. These branches include the Land Management Branch, the Resource Evaluation Branch, the Environmental Protection and Engineering Branches, the Canada Benefits Branch and the Policy Analysis and Coordination Branch.

In addition, COGLA's regional offices in St. John's, Halifax and Yellowknife and the branches receive input and support from other federal government departments that also have regulatory responsibilities in the offshore. These include the Canadian Coast Guard on marine matters, Environment, and Fisheries and Oceans on environmental concerns, the Canada Employment and Immigration Commission with respect to employment considerations, and the Department of Regional and Industrial Expansion for matters pretaining to the development of industrial strategy.

Review 1983-84
COGLA negotiated 36 exploration agreements with petroleum companies in the North. The companies committed themselves to drilling up to 45 wells over the period covered by the agreements, which generally last from one to five years. Total estimated value of these drilling programs is more than $2.5 billion.

Mainland Region

Esso Resources Canada Limited continued work on its Norman Wells Oilfield Expansion Project, which began in 1982. Fifty-seven wells were drilled and four of six artificial islands to be constructed in the Mackenzie River were completed. Administration of design approvals on the Norman Wells project is COGLA's responsibility. In 1983, COGLA carried out surveillance of the drilling, production and construction operations, which included regular on-site drilling and safety inspections. Production facilities related to the existing refinery and the proposed central processing facility were also inspected. All production and injection wells and testing procedures for the pipeline gathering system were checked.

Twenty-seven exploration agreements were concluded in the Mainland Region. Under these agreements, which have terms ranging from one to five years, petroleum companies committed themselves to drill up to 30 wells. Total costs associated with these drilling programs are expected to be in the range of $230 million.

Aside from development drilling at Norman Wells, three wells were drilled in the Mainland Region. All were dry and abandoned in 1982 - 83 winter drilling season. A fourth well was spudded late in the year.

Most drilling in the Mainland Region resulted in short-term employment opportunities for residents of nearby areas. More than one third of the 275 jobs created by these drilling programs were filled by northern residents. The Norman Wells project created job opportunities for more than 1,000 residents of the Yukon and the Northwest Territories. Approximately $64 million has been invested to date as a result of contracts signed between Esso Resources Canada Limited and Interprovincial Pipeline (NW) Ltd.

Mackenzie Delta-Beaufort Sea Region

Eight exploration agreements were concluded. In the Beaufort, operators committed themselves to drill up to 15 wells. Total costs associated with these drilling programs over the periods of the agreements are expected to be approximately $2.3 billion.

Twelve exploratory wells were either spudded or re-entered. Four drillships, three artificial island-based drilling rigs, one conical drilling unit and one land-based rig were active in this region. Because of increasing drilling activity, COGLA opened an inspection office in Inuvik with two fulltime inspectors who are responsible for both offshore sites and land rigs. The activities of this office will supplement those of COGLA's office in Yellowknife.

Drilling operations created 2,000 job openings for Canadians, over 620 of which were recruited from 30 northern communities. Almost 100 per cent of the Beaufort Sea workforce is Canadian.

Formal training programs to enable northerners to assume positions in the petroleum industry continued. Some of this training consists of Canadians working on the job with non-Canadians to enable the former to eventually assume relatively senior positions within drilling programs.

Total operating expenditures of drilling programs in the region was approximately $658 million. Almost $480 million (73 per cent) was spent purchasing Canadian goods and services. Over 10 per cent of the Canadian expenditures were made in the Mackenzie Delta-Beaufort region.

Arctic Islands

No exploration agreements were concluded, because exploration over the next five years was covered in 21 agreements concluded in 1982 with Panarctic Oils Ltd., the operator in the area. Five wells were completed in 1983.

Operators spent a total of $74 million in seismic and drilling expenditures in 1983, $58 million of which was spent on Canadian goods and services. Approximately four per cent was spent in the region.

During the seven-month season, there was a monthly peak of 237 jobs, of which 47 were filled by Inuit hired from the communities of Pond Inlet and Arctic Bay. The remaining 190 were filled by Canadians recruited throughout the country.

Hudson Bay

In 1983, more than 8,000 kilometres of seismic were shot, creating a total of 34 jobs on seismic vessels. Twenty positions were filled by Canadians and 14 by non-Canadians. Native persons from the region were hired as environmental observers. Canadian Occidental initiated an extensive environmental overview of the Hudson Bay region. Total spending relating to the seismic activity was $7 million, of which approximately 35 per cent accrued directly to Canada. Support services for the seismic program, such as crew transfer and emergency evacuation, were again provided using helicopters based at Churchill. In May, 1983, the Ministers of Energy, Mines and Resources and of Indian Affairs and Northern Development, approved the establishment of a Hudson Bay Oil and Gas Committee to represent residents of the region who may be affected by hydrocarbons exploration activities.

Administration Program

Technical Services and Contracts Branch

Economic Function: General Government Services

Responsibilities

The Branch is responsible for providing professional and technical expertise in the planning, design, procurement, technical operation and maintenance of real property and other departmental assets, and for contracting. The Branch develops related policies, standards, guidelines, systems and training packages.

Review 1983-84

The Transportation Division provided engineering, project management and general engineering support services in the planning, design and implementation of northern highways, with design and construction services provided by Public Works Canada and the Territorial Governments under the Engineering Services Agreements.

On the Liard Highway all the remaining bridges have been constructed and the highway is scheduled to be officially opened on June 23, 1984.

Work was started on the reconstruction and paving of the Mackenzie Highway from Km. 0 (Alberta-N.W.T. border) and is expected to be completed to Km. 84 (Enterprise, N.W.T.) in 1987.

Preparatory work is underway to compete the subgrade and surfacing of the Mackenzie Highway between Fort Simpson and Wrigley. This section is expected to be completed in 4 years, provided that Treasury Board approval is obtained.

The reconstruction of the Dempster Highway from Km. 0 - 125 was started. Grade strengthening and surfacing was carried out in several locations from Km. 125 to Km. 460.

The upgrading of the Carcross-Skagway Road between Carcross (Km. 106) and the Alaska Highway (Km. 159) began this year and is expected to be completed by 1986.

The Hyland River Bridge on the Nahanni Range Road in the Yukon was completed. Design and development studies for the North Canol Road continued for the second year of the 3 year program.

The Building Division, in support of the National Energy Program, continued a program to monitor the performance of two staff houses in Frobisher Bay with regard to the application of new technology and energy conservation.

The Buildings Division staff is participating with other government departments, provincial and territorial governments, agencies and private industry in developing a new energy-efficient residential construction standard for the North. A draft of the standard was completed and is now available. Future work will involve an introduction of the standard to those concerned with housing in the North and the preparation of interpretation documents. Recommendations, drawings, and estimates were made to permit upgrading facilities at Baker lake, Sarcpa, Rankin Inlet and Resolute Bay.

A project management service was provided for the three district office buildings for the Northern Program. The first, at Yellowknife, is expected to be completed by the end of March 1984; for the second, at Fort Smith, construction is expected to start in May 1984 and be completed by November; the third, at Frobisher Bay, is at the design stage for construction in 1985. The design and construction agency for these offices is Public Works Canada.

The Municipal Services Division carried out inspections of an existing electrical installation at the summer research station at Sarcpa Lake.

Maintenance Management Systems development was started in both the Yukon and N.W.T. Regions in 1983/84 with assistance from the Technological Development Division. In addition, the Branch and N.W.T. Region entered into discussions with a number of departments operating in the North, to develop a common services process for the more efficient servicing and repair of federal facilities.

The Terrain Information Section of Technical Data Services continued to provide technical services and advice to the Northern Program (at HQ and in the Regions) and to Territorial Governments in the activities of air and ground surveys, topographical and photomapping and various photogrammetric requirements.

The work done by the section comprised the analysis of the yearly work program needs, preparation of cost estimates, carrying out the research, evaluation and development of existing data base and preparation of technical specifications required for contract documents. The section also participated in interdepartmental air and ground survey committees.

To complement the contract work, in-house resources were used to produce air photos mosaics, topographical drafting, thematic maps and indices.

Plans 1984-85

Construction work will continue on Dempster Highway, Carcross-Skagway Road and Mackenzie Highway. Reconstruction on the Canol Road will begin subject to approval to proceed.

The evaluation of energy conservation technology for application to northern energy efficient house design, construction and retrofit will continue. Construction of district office buildings in Fort Smith is expected to start in May 1984. The design phase for a new district office building at Frobisher Bay will begin.

The Technical Services and Contracts Branch and N.W.T. will continue discussions with a number of departments that operate in the North to develop a common services process for the more efficient servicing and repair of federal facilities.

Indian and Inuit Affairs Program

Responsibilities

The Indian and Inuit Affairs Program helps Indians and Inuit in the Yukon Territory and Northwest Territories to achieve their cultural, social and economic goals. The Program works in co-operation with native groups and the Territorial Governments.

Housing and Band Support

Economic Function: Education

Headquarters

Review 1983-84

A total of $105,000 was allocated in the Yukon Territory and $76,560 in the Northwest Territories during the 1983-84 fiscal year for the Band Training Program.

In the Northwest Territories, band training initiatives were directed primarily to Band managers. Workshops were held in management, housing, training and financial programs.

The Yukon Region developed a comprehensive training program related to various aspects of housing.

The Band Training and Advisory Services Directorate (BTAS) concluded its assistance to the Council for Yukon relating to the development of a native broadcasting system in the Yukon. The directorate provided $10,000.00 for the development and training of radio operators, technicians and programmers for the anticipated northern native broadcasting system. Funding was provided for the development and delivery of an administrative skills course. Special projects in the N.W.T. included a Distance Education project in Aklavik and Snowdrift and a project to provide training skills to individuals to enable them to teach others these administrative techniques.

Plans 1984-85

The Indian Management Development Program, formerly the Band Training and Advisory Services Directorate, will continue to assist Indian Band Councils and staff to assess management development requirements and to develop and implement strategies and plans to meet these requirements.

Resource, Economic and Employment Development Branch (REED)

Review 1983-84

Economic Function: Economic Development - Other

Resource Development Impacts

The Resource Development Impacts (RDI) Directorate was established in 1981-82 to respond to the concerns of Indian people about major resource development. In 1982-83 Indian bands in the Yukon, British Columbia and Northwest Territories were provided with funding to enable them to deal more effectively with the impacts of major resource development. In 1983-84 due to a temporary lapse of authority and funding, RDI operations were severely curtailed, and only two northern projects were funded.

In the Yukon, the Directorate provided financial assistance and technical advice to the Ross River Band regarding the impact of proposed Canada Tungsten mining in MacMillan Pass, and to allow continuation of the 50% cost-sharing arrangement with the proponent, of a comprehensive socio-economic impact study initiated in 1982-83. The Ross River Band has secured trucking contracts and tentative training programs with the Yukon Barite Mine and Mill operation.

In the Northwest Territories the Directorate provided technical assistance to the Dene Nation, and to Dene communities in the Mackenzie Delta and along the Mackenzie River to deal with the impacts of the Beaufort Sea Hydro developments and the Norman Wells pipeline construction. Financial assistance was provided for studies of the proposed Slave River Hydro development.

Plans 1984-85

Authority and funding having been reinstated, the Resource Development Impacts Directorate will assist Indian communities which will be affected by resource developments.

Economic Institutions

In 1983/84, Economic Institutions funded the Yukon Indian Development Corporation (YIDC). The YIDC is an organization established to administer and invest that portion of land claims settlement funds identified for economic development purposes. Pre-land claims settlement funding has been provided to the YIDC to ensure effective use of Claims Settlement Funds when these become available.

Regional Offices

Yukon Region

Responsibilities

The Yukon Region of the Indian and Inuit Affairs Program carries out administrative functions for approximately 3,400 status Indians from 13 Bands in the Yukon and 3 in northern British Columbia. The program is designed to help Indian people to achieve their cultural, social and economic goals and to ensure that Canada's constitutional and statutory obligations are fulfilled.

Resource, Economic and Employment Development

Review 1983-84

The Resource, Economic and Employment Program provided loans, contributions and advisory services to assist Yukon Indians in business development and job creation.

The program contributed $55,695 in business assistance to individuals and companies and $307,500 for institutional development, training programs and traditional pursuits.

A sub-regional economic development plan for three Northern Bands was co-funded by Department of Regional Industrial Expansion (DRIE) and Resource, Economic and Employment Development. Phase 1 of the economic plan has been completed, and Phase 11 is in process.

The Ross River Indian Band completed a Resource Development Impacts study.

A forest fire suppression course was sponsored by the Council for Yukon Indians (CYI) and jointly funded with Canada Employment and Immigration Commission (CEIC) and the Forestry Division of DIAND's Northern Program. The course was attended by six members from each of the four participating Bands.

The occupational skills training and adult education programs were transferred from the Education Program. About 20 students were assisted.

Plans 1984-85

The Resource Economic and Employment Development Program will continue to provide financial assistance and advisory services in training, planning and business development. The Loan Improvement Process will continue. The Sub-regional economic development plan is expected to be completed by the end of the first quarter.

Social Development

Economic Function: Economic Development - Human

Review 1983-84

High levels of expenditure continued in the Income Maintenance program as a result of continuing severe economic conditions in Band communities and throughout Yukon generally.

The Social Development Program continued to support the activities and increased involvement of Yukon Indians in the Child Welfare system and in Government of Yukon plans to review and amend the Child Welfare Act.

Through involvement in various governmental committees and study groups, the department provided input into defining and structuring services in Yukon to meet the needs of the elderly status Indian population.

Through the establishment of increased and more effective communication links with the Council of Yukon Indians, the Program undertook to identify issues and encourage co-operative planning for the eventual implementation of a Yukon Indian Land Claims settlement. Related consultation with the Government of Yukon began.

Plans 1984-85

The Social Development program will support and encourage increased training activities for Band Social Development staff through consultation with the Council for Yukon Indians and the Government of Yukon.

Planning related to social welfare needs arising from the anticipated settlement of Land Claims will be emphasized.

Education Program

Economic Function: Education

Review 1983-84

Elementary and secondary education programs are the responsibility of the Yukon Government. However, DIAND is directly involved in post-secondary and adult education programs.

The program sponsored 30 full-time and 21 part-time students thus allowing them to attend colleges and universities. This number represents an increase of almost 50 over the previous year. The contribution agreement with Council of Yukon Indians included post secondary funds for staff training (8 full time students) and adult education funds.

Yukon Hall, the Region's only student residence, provided accommodation to students from other communities who attend in-school projects in Whitehorse. In addition, three group homes in outlying communities were funded.

Continuing funding was provided to the Council for Yukon Indians for programs in curriculum development. The pilot project for the Grade 1, Social Studies program was introduced in several Yukon schools.

Plans 1984-85

The Education Program will transfer responsibility for Adult Education to the Resource, Economic and Employment Development Program but will continue to provide services in post-secondary education and student accommodation. Advice and assistance to bands will be provided to enable improved service delivery under programs transferred to the Band's responsibility.

Local Government Program

Economic Function: Local Government

Review 1983-84

The Yukon Region's Local Government Program made funding available to all fifteen Bands in the Region for locally administered community services. Local Government programs provided funding for band support, fire fighting equipment, water and sanitation facilities, and programs in community planning and recreation. The Program also provided capital funding to Band Councils for the construction of housing and other buildings and for the surveying of land considered suitable for Indian housing.

The Program worked closely with the Bands and the Canada Mortgage and Housing Corporation (CMHC) to provide housing in native communities.

In July 1982, the Federal Treasury Board gave approval in principle for the Kwanlin Dun Band to relocate its Village from the industrial section of Whitehorse to a residential area. The relocation will likely begin in 1984 and be completed by 1987. The site of the present village will become an industrial park.

Plans 1984-85

Bands will continue to control and manage municipal services. The Program will work to increase Band participation in joint INAC and CMHC housing programs and to provide increased Band staff training.

In view of impending land claims settlements, a Treasury Board submission seeking to accelerate Band planning and training will be prepared.

Northwest Territories

Responsibilities

The Regional Office of Indian and Inuit Affairs in Yellowknife consults with 17 band councils, 8,470 Registered Indians, native associations and the Northwest Territories Government to promote the social and economic development of Indian bands.

The Economic Development Program provides advice and financial assistance to enable Native Northerners to communicate with government departments and private organizations involved in economic development in the North.

Review 1983-84

The amalgamation of Band Councils and Settlement Councils in the Western Arctic, led to the development of a new Community Ordinance. Representatives of the Dene Bands, the Government of Northwest Territories and the Indian Affairs Program are involved in this project.

An Economic Development Task Force, composed of regional representatives of Dene Bands and the Dene Nation was formed. Its task was to formulate Dene policies in relation to Economic Development Agreements, megaprojects and community based economic development.

Core funding and band overhead costs were consolidated under the National Band Support Funding Program. Overall funding was increased by 100%, thus enabling the bands to engage competent staff as well as to provide additional consultation funding on regional and national issues.

Plan 1984-85

The implementation of a community based training plan will be promoted, particularly for those communities directly affected by the Norman Wells pipeline.

The Economic Development Task Force initiatives, particularly in relation to the Economic Development Agreement and the Native Economic Development Fund, will be supported.

The regional office will participate in the formulation and development of the Community Ordinance Legislation of the Northwest Territories.

Labour Canada

Economic Function: General Government Services

Responsibilities
Labour Canada administers the Canada Labour Code and is responsible for maintaining a balanced legislative framework covering industrial relations in the private sector coming under federal jurisdiction. It also establishes minimum standards for wages, working conditions, safety and health and helps to resolve problems facing individuals or groups in these areas. Labour Canada works to minimize and resolve labour-related conflict within the Department's legislative framework.

Employees or employers engaged in any provincial, national or international work or business fall within Labour Canada's jurisdiction.

Because labour affairs are becoming more and more complex, Labour Canada maintains offices in major centres across the country to make the Department's services more accessible to those who need them. These offices have primary responsibility for implementing departmental programs, while maintaining close liaison with headquarters.

Mediation and Conciliation Services

The Mediation and Conciliation Branch, provides third-party assistance in private-sector labour/management disputes.

The Branch also provides preventive mediation assistance to management and labour during the term of a collective agreement, as well as advisory services in other types of industrial relations problems.

Review 1983-84
During the fiscal year, 16 collective bargaining disputes affecting territorial employees were handled by the Service. Of this total, 13 disputes including 2 involving work stoppages were pursued to a satisfactory conclusion, through conciliation or post-conciliation negotiations. Three disputes were pending at fiscal year-end. The disputes involved companies engaged in mining, road and water transportation, construction, municipal services and food services.

Plans 1984-85
Normal planning to meet responsibilities.

Arbitration Services

The Branch assists in resolving private sector labour/management disputes arising from the interpretation, application, administration or alleged violation of collective labour agreement provisions.

Review 1983-84
During fiscal year 1983-84, Arbitration Services received six applications from parties in the North for appointment of either arbitrators or arbitration board chairmen. Two arbitrators and two arbitration board chairmen were appointed. One case was pending as of March 31, 1984, and in the remaining case it was not appropriate for the Minister to make an appointment.

Plans 1984-85
Normal planning to meet responsibilities.

Employment Relations and Conditions of Work Branch

Labour Education Program (LEP)

Labour Canada's Financial Assistance Program provides financial support to legally constituted union organizations in Canada to develop and or conduct educational activities to train existing and potential union leaders.

Review 1983-84
The Northwest Territories Teachers' Association, representing 758 members, received a labour education grant of $1,084.00. The grant was applied to a two-day conference the objective being to familiarize the regional presidents with the structure of the association, grievance procedures, consultation techniques and collective bargaining.

Plans 1984-85
Normal planning to meet responsibilities.

Quality of Working Life (QWL) Program

The Quality of Working Life Program encourages Canadian organizations to promote innovative practices in response to changing economic and social conditions in the workplace. Program goals include increasing employee work satisfaction, making better use of human resources and improving relations between labour and management.

Major program thrusts are concerned with changing traditional values and attitudes of senior company and union officials, developing resources and establishing structures that are supportive of program objectives.

There were no QWL activities specifically relating to Canada's north in 1983-84.

Plans 1984-85
Normal planning to meet responsibilities.

Mountain Region

The following is a summary of the activities of the Whitehorse Office of Labour Canada, Mountain Region, in the North (Yukon Territory and Northwest Territories). This report will deal with the administration of Part III and Part IV of the Canada Labour Code, Treasury Board Occupational Safety Policies, standards and guidelines in the Federal Public Service and the Fair Wages and Hours of Labour Act during the 1983-84 fiscal year.

A Labour Canada office has been in operation in Whitehorse, Y.T. since August 2, 1978. Staffed by a Labour Affairs Officer, with clerical assistance, it is designed to serve both Yukon and Northwest Territories. A Zenith toll free line between Whitehorse and six major N.W.T. communities expedites service in the area. Staff from the Vancouver and Edmonton Offices will supplement services as required.

Federal Contracts

a) Inspections on Government Contracts (Fair Wages and Hours of Labour Act).

During the fiscal year, 17 complaint inspections were carried out by the Labour Affairs Officer from Whitehorse, (of these 1 was made in the Northwest Territories and 16 in the Yukon Territory). Wage adjustments were collected from 3 contractors as a result of these inspections; violations were corrected, and the sum of $8,056.99 was recovered for 12 employees in the Northwest Territories and $1,715.45 for 1 employee in the Yukon Territory.

b) Wage Schedules Issued:

	Northwest Territories	Yukon Territory
Construction Contracts	71	68
Service Contracts	Nil	Nil

Part III - Canada Labour Code (Labour Standards)

Provisions of Part III of the Canada Labour Code do not apply to a work undertaking or business of a local or private nature in the Yukon or the Northwest Territories but only to those businesses or undertakings that normally come under federal jurisdiction as in the provinces.

During the 1983-84 fiscal year 63 complaints were investigated under Part III of the Code. Twenty were in the Yukon Territory and 43 in the Northwest Territories. As a result of these investigations, the sum of $240.00 was recovered for 1 employee in the Yukon Territory, and $15,632.44 for 22 employees in the Northwest Territories. In the same period four routine inspections were carried out in the Northwest Territories, and three in the Yukon Territory.

Part IV of the Canada Labour Code (Safety of Employees)

The long term objective in the Territories is the implementation of a comprehensive employment safety program covering employees subject to Part IV of the Canada Labour Code. This also applies to employees of the Public Service of Canada who are covered by the Treasury Board Occupational Health and Safety Policy. Under Part IV, the Department is responsible for ensuring that employers maintain safe and healthy working environments in federal works, undertakings and businesses. In the Federal Public Service, the Department acts as an agent of Treasury Board in assisting in the development and improvement of safety programs, and monitors existing programs in accordance with the Occupational Health and Safety policies of Treasury Board.

Summary of Activities - Yukon Territory & Northwest Territories

During the 1983-84 fiscal year, 66 safety cases involving complaints, counselling, inspections, surveys, safety audit program, development and accident investigations, were undertaken in the Yukon and the Northwest Territories. The following industries, companies, crown corporations or departments were covered:

1) Banks
2) Highway Transport
3) Telephone Industry (Northwest Telecommunications)
4) Northern Canada Power Commission
5) Canada Post Corporation
6) Parks Canada
7) Airlines
8) Transport Canada
9) Shipping Northern Transportation
10) Indian and Northern Affairs
11) Health and Welfare
12) Fresh Water Fishing Corporation

During the 1983 fiscal year, the Labour Affairs Officer from Whitehorse made three service trips to the Northwest Territories to 12 communities, travelling a total of 7,240 miles.

During Sept. 13-14/83 a labour standards - safety seminar was held in Whitehorse, Y.T. at the Northern Conference of International Brotherhood of Electrical Workers attended by 30 delegates.

On March 27-28-29/84 a safety presentation was given to the Transport Canada Airworthiness Seminar and the 7th annual meeting of the Northern Air Transport Association held in Whitehorse, Y.T.

Formal agreements with the Yukon and Northwest Territories Governments were renewed in 1984 whereby they will conduct on behalf of Labour Canada technical inspections of boilers, pressure vessels and elevating devices in federal buildings. During the year 1983-84 inspections done on our behalf included:

Boilers and Pressure Vessels	203
Electrical	13
Elevating Devices	Nil

Accident Compensation

Total claims processed in the Northwest Territories to the end of March, 1984, totalled 312 and in Yukon, 163.

Plans 1984-85

For the fiscal year 1984-85, the priorities will include safety inspections and accident investigations in both the private sector under federal jurisdiction, and in the public sector of federal government departments and crown agencies.

Labour Data Branch

The Labour Data Branch carries out an annual survey of wages, salaries and conditions of work in establishments with 20 or more employees. The October 1, 1983 survey included 43 establishments in Yukon and 57 in the Northwest Territories. The survey will be carried out again in 1984.

Information on work stoppages due to strikes and lockouts in the two territories is maintained on a continuing basis. In 1983, two work stoppages were reported.

The Branch maintains a file of collective agreements, which included 39 agreements covering some 7,890 employees in the Territories.

Plans 1983-84
Normal planning to meet responsibilities.

Legislative Analysis and Research Division

The Legislative Analysis and Research Division collects and analyses legislation affecting employer-employee relations and physical working conditions. Through its publications, the Division reports legislative developments pertaining to occupational safety and health, workers' compensation and employment standards adopted in Yukon and the Northwest Territories as well as federal legislation applicable in the Territories. The Division also prepares an annual report for the Canadian Association of Administrators of Labour Legislation (CAALL), an organization that brings together representatives of the federal and provincial departments of labour and representatives from both Territories. Finally, upon request, the Division provides Government officials, organizations and individuals in the Territories with information on the labour legislation in the various jurisdictions.

Plans 1984-85
Normal planning to meet responsibilities.

Industrial Relations Information Service (IRIS)

IRIS is a service intended primarily for those involved in labour relations and collective bargaining. It is a "one-step" information service for parties on both sides of the bargaining table and provided prompt answers to questions on industrial relations.

IRIS is available to individuals and organizations in the Yukon and Northwest Territories. They may either call (819) 997-3117 (collect calls are accepted) or write to the following address:

Industrial Relations Information Service
Labour Canada
Ottawa, Ontario
K1A 0J2

International Relations Division

The International Relations Division has the lead responsibility in matters relating to Canada's participation in the International Labour Organizations (ILO). Among the Organization's principal activities is the monitoring of international labour standards resulting from ILO's Conventions and Recommendations.

Given Canada's jurisdictional framework with respect to labour affairs, a long-standing practice has been to consult with provincial and territorial authorities on these standards. These consultations are carried out on an on-going basis, and culminate in an Annual Meeting of Deputy Ministers on ILO matters. Senior labour administration officials from the Yukon and the Northwest Territories are also invited to attend and to provide input.

Plans 1984-85
Normal planning to meet responsibilities.

National Defence

Economic Function: Defence

Responsibilities

The Department of National Defence safeguards the sovereignty and independence of Canada. In the North, the Department protects Canada against threats and challenges to its territorial integrity, including the Canadian territorial sea and airspace. It contributes to collective security arrangements with its allies in North America and NATO.

DND supplements and supports civil departments and agencies of government in discharging their responsibilities in the North, while participating in the promotion of national development aims. Additionally, DND provides a large measure of the means necessary for reinforcing Canada's jurisdiction in the area, under national and international law.

Review of Activities - 1983-84

Personnel

Canadian Forces teams from Vancouver, Edmonton, Winnipeg, Montreal and St. John's conducted briefings on career opportunities in the Canadian Forces and made themselves available for interviews in fifteen northern and Labrador Coast communities. Since last year, 24 applicants have been, or will soon be, processed for enrolment and three have been enrolled. The reduction in this year's enrolments is largely due to a restriction imposed on northern recruiting. This restriction followed the accumulation of evidence that neither the Forces nor the native people were deriving maximum benefit from the Northern Peoples Development Program (NPDP). A review is currently under way to determine methods for improving the program.

The native cultural awareness training which was initiated last year has received formal endorsement as a Canadian Forces course. The course will now be conducted annually so that eventually all those military personnel who regularly encounter native peoples will benefit.

Due to a current lack of employment opportunities in the North, the seven month aircraft mechanics course for northern natives, conducted annually at Canadian Forces Base Borden, was cancelled for this year.

Maritime Forces

Aurora aircraft flew approximately 400 hours on Northern Patrols (NORPATS) in the arctic. The NORPATS normally operate out of Frobisher Bay and Yellowknife. In addition to fulfilling their primary role of sovereignty surveillance, these patrols support the individual requirements of various government agencies. During the ice season, Transport Canada observers were carried on the patrols for ice reconnaissance. Other tasks included: photography for the Department of Indian Affairs and Northern Development and for the Department of Fisheries and Oceans; the investigation of offshore oil exploration and drilling activity on the archipelago; and the reporting of population movements. Scientists and observers from other government departments were also carried, conducting such activities as the investigation of seabird and marine populations in the Beaufort Sea.

During the summer of 1983 two Tracker aircraft from 880 Maritime Reconnaissance Squadron based at Summerside, PEI, spent seven days flying training missions in the Coral Harbour, Frobisher Bay and Hall Beach areas. These missions are designed to provide training to Tracker pilots in both northern operations and operations from small gravel strip airfields.

Land Forces

During the past fiscal year, Mobile Command activities were limited to operational reconnaissance by staff officers from the Command Headquarters and commanders and staff officers of the formations which have responsibilities for conducting training and operations in the North. The Mobile Command Arctic Training Plan 1980-85 on which previous exercises were based, is being revised to more closely meet the requirements and capabilities of the Command.

Four adventure training exercises by small groups of soldiers were undertaken, three in the Northwest Territories and one in the Yukon. These exercises are designed to challenge junior leaders under difficult conditions and to expose young soldiers to the arctic environment.

Two long range communications exercises, one in the western and one in the eastern arctic were conducted by southern based signals units using their portable equipment.

Air Forces

Air Transport Group Hercules aircraft provided weekly service flights as well as special flights to support Canadian Forces Stations Inuvik and Alert. Resupply flights to Canadian Forces Station Alert, known as Boxtop operations, were carried out in May, August and November 1983.

Hercules and Buffalo aircraft provided airlift support for land forces exercises in the high arctic. Twin Otter aircraft of 440 Squadron from Edmonton and Yellowknife were utilized for liaison flights throughout the North and assisted in seven search and rescue tasks.

Twin Huey, Kiowa and Chinook helicopters from 10 Tactical Air Group provided 300 hours of airlift in support of improved communications systems in the high arctic. The recovery of a damaged Twin Otter aircraft at Alert required 31 hours of Twin Huey time.

The Distant Early Warning (DEW) Line, consisting of four main sites and seventeen auxiliary sites, continues to provide a military presence and air defence warning capability in the arctic. These installations stretch from Cape Dyer on the East Coast of Baffin Island to Komakuk Beach near the Alaskan Border.

During the period, aircraft and crews from Canadian Forces squadrons flew close to 200 hours on various search and rescue missions across the North. The Canadian Forces air demonstration team, the Snowbirds, provided air shows at Whitehorse, Yellowknife and Inuvik.

Military Engineering

Major construction activity during FY 1983/84 centered on continuation of work on the Headquarters and Personnel Services Building at Canadian Forces Station Alert. This work involved erection of structural steel and siding as well as interior work which included the installation of walls, plumbing, and electrical and heating systems.

During the period mid June to early August, the Mapping and Charting Establishment conducted Operation Arctic 83 on Baffin Island and the islands in the Foxe Basin. This task was necessary to provide sufficient ground control to complete the requirements of the Aerial Survey Data Base covering the area in support of 1:50,000 scale mapping. The operation was conducted from two base camps: initially Pond Inlet for three weeks and then Longstaff Bluff for the balance of the period. Helicopter support was provided by Sealand Helicopters Ltd of St. John's, Newfoundland.

In May 1983, 2 Combat Engineer Regiment assisted in the withdrawal of the Department of Energy, Mines and Resources "Canadian Expedition to survey the Alpha Ridge" (CESAR) base camp. This involved the parachuting in of engineers and heavy equipment to clear snow off the ice landing strip to allow Canadian Forces Hercules aircraft to pick up personnel and equipment.

Northern Region Headquarters

Northern Region encompasses the land and water areas of the Yukon and Northwest Territories. Northern Region Headquarters (NRHQ) is responsible to National Defence Headquarters and its role is "to discharge regional military functions and to assist and facilitate activities of other elements of the Canadian Forces within Northern Region". It serves as a Department of National Defence agency for contact and assistance to the territorial governments and federal government departments in the North.

NRHQ continued to provide liaison, technical advice and logistic assistance for northern exercises mounted by other commands. Two exercises of interest conducted during the period were Exercise Klondike Challenge and Exercise Nanook Lark.

Exercise Klondike Challenge

Exercise Klondike Challenge was a 30 day adventure training exercise conducted by First Battalion, The Royal Canadian Regiment with attachments from other units of the Special Service Force. The exercise followed the route taken by the Yukon Field Force in 1898 and involved an arduous overland trek of 400 kilometers from Telegraph Creek, British Columbia to the southern end of Teslin Lake, followed by a 700 kilometer voyage down the Teslin and Yukon Rivers to Dawson City. NRHQ assisted the Royal Canadian Regiment in reconnaissance, in community liaison and by providing a liaison officer. 440 (Transport and Rescue) Squadron Detachment at Yellowknife provided resupply and medical evacuation with a float-equipped Twin Otter Aircraft.

Exercise Nanook Lark

Exercise Nanook Lark was a long range communications exercise which involved Canadian Forces Communication Command, Government of the Northwest Territories and Northern Region Headquarters. The aim of the exercise was to practice Government of the Northwest Territories emergency plans, establish procedures in the event of civil emergencies and to practice NRHQ response to a request for assistance.

Reserves - The Canadian Rangers

The Canadian Rangers are a separate component of the Reserves whose role is to provide a military presence in the sparsely settled northern, coastal and isolated areas of Canada which cannot conveniently nor economically be covered by other elements of the Regular or Reserve Forces. There are 680 rangers organized into 12 to 30 man patrols in 36 communities throughout the Northwest Territories, northern Manitoba and Quebec.

NRHQ maintains liaison with all ranger patrols, resupplies each ranger with 200 rounds of ammunition every year and conducts formal ranger training once every three years in map using, communications, first aid, rifle and drill. In 1983 the NRHQ ranger staff conducted exercises in fourteen northern communities.

Cadets

The cadet movement, a significant youth movement in the North, promotes physical fitness, citizenship and leadership training. Cadet corps and squadrons compete for flying scholarships and recognition in such skills as shooting and drill. In 1983, four cadets within Northern Region earned Gold Stars, the highest achievement level, and five were awarded flying scholarships. There are 18 cadet corps and squadrons in Northern Region, dispersed over a large area including Baffin Island, the Great Slave Lake area, the central arctic and the Yukon Territory. Total strength is 600 cadets and 90 Cadet Instructors List (CIL) officers and civilian instructors.

Cadets from Northern Region attended summer camps across Canada and two cadets participated in the Canadian Forces Europe flyover. The majority attended courses at Cadet Camp Whitehorse in the Yukon, the only cadet camp "North of 60". This national cadet camp offers training in subjects such as canoeing, mountaineering, bushcraft and visits to historical sites.

The annual "Trail of 98" was completed by 60 top cadets from regions all over Canada. The trek involved hiking through the Chilkoot Pass from Skagway, Alaska to Bennett Lake, British Columbia and travelling 700 kilometers down the Yukon River by boat to Dawson, Yukon.

This past year saw the establishment of a permanent cadet camp 12 kilometers south of Whitehorse. The leasing of the vacated Wolf Creek Correctional Facility and surrounding land from the Yukon Government has enabled construction of a permanent cadet camp.

Construction of sixteen log cabins to be used as cadet quarters, classrooms and dining areas and the renovation of the existing facility commenced in September 1983. The proposed completion date is June 1984 with cadets occupying the camp in early July 1984. The construction activity involves personnel from NRHQ, Canadian Forces Base Edmonton, the New Employment Expansion and Development Program, and Katimavik. The initial facility will provide accommodation for 350 cadets. Long term plans will increase this to 600 cadets.

Visits

In 1983 NRHQ was visited by numerous groups and individuals. Among them were the Chief of the Defence Staff, foreign service attachés, members of the National Defence College and foreign students attending the Canadian Forces Command and Staff College.

Research and Development

Economic Function: Short Range Research

Responsibilities

The Research and Development (R&D) branch formulates and implements departmental scientific policy and controls and manages the R&D program of the department. The Branch is responsible for ensuring the availability of a technology base capable of providing the knowledge and experience necessary to solve scientific and technological problems related to departmental operations and equipment. Research is undertaken on a variety of projects aimed at acquiring knowledge relevant to military operations in the North and the testing and evaluating of equipment and systems proposed for use in arctic or other adverse environments.

Review 1983-84

The internal R&D program of the department is conducted in its six research establishments. During 1983/84, five of these establishments were involved, to some degree, in research related to northern activities and a number of research contracts were awarded to Canadian universities and industries in support of this research. In addition, Kingston's Royal Military College Military Engineering Research Group (RMC/MERG) conducts research on problems associated with engineering in a northern environment.

The Defence Research Establishment Pacific (DREP) activities included: a major field trial conducted in April along the northwest coast of Ellesmere Island in cooperation with the CESAR project; a small semi-permanent camp was established on sea ice approximately 8 km from shore at the mouth of Yelverton Bay; small expeditions to Nansen Sound and Yelverton Bay in August to carry out acoustic measurements; small expeditions to Assistance Bay (south Cornwallis Island) in May, June and July to carry out geomagnetic activity measurements; and a field trial conducted in the Barrow Strait/Jones Sound areas in August and September to carry out maintenance of DREP camps. This last field trial was conducted with the support of the CCGS SIR JOHN A. MACDONALD and a team of Canadian Forces divers.

A continuing activity initiated by the Defence Research Establishment Valcartier (DREV) was designed to determine the effects of long-term storage upon the service life of the CRV7 rocket motor in a variety of climatic environments; motors are being stored at Canadian Forces Station Alert as part of the trials. Prototype development has proceeded on a smoke marker for use in military search and rescue operations, and in low altitude parachute extraction system operation in the arctic environment.

In preparation for the TEAL RUBY experiment using an infrared surveillance satellite, infrared surveys of terrain and sea continued in northern Quebec and in the Northwest Territories in the region between the McKenzie River and Great Bear Lake. The surveys are made from an airborne platform operated by the Canada Centre for Remote Sensing of the Department of Energy, Mines and Resources and are supported by ground truthing measurements. One ground expedition has been made at Kuujuac (Fort Chimo).

Scientists in the Protective Sciences Division of the Defence Research Establishment Ottawa (DREO) are responsible for research on clothing and protective equipment required for use in harsh environments. During the year, research activities continued in basic studies of heat and vapour transport in clothing insulants. Prototype sleeping bags have been designed which are lighter and warmer than current CF Bags. These new bags should be much cheaper to construct. The study of face masks for use under cold windy conditions has concentrated on problems associated with moisture condensing on the mask and ways of avoiding this problem. A new design for an arctic tent for use by small patrols has reached the prototype stage.

Various items for use in cold weather were field tested during Exercise Kovik Return held at Rankin Inlet. A questionnaire was circulated to 12 CF bases to obtain information on problems associated with personnel protection during cold weather operations. An analysis of the data will be completed shortly.

DREO scientists are developing applications for lithium sulfur dioxide batteries. Compared to existing types, these batteries have a higher energy density (resulting in a smaller, lighter package) and, more importantly, much improved low temperature performance (down to -40°C). Of significance to northern applications is their use in search and rescue/survival equipment such as Emergency Locator Transmitters, Crash Position Indicators, Personal Locator Beacons and Radar Transponders, and other portable equipment such as radios. The low temperature cranking capability of the BB-248 lead acid battery used for vehicle starting is being improved.

Various research activities related to the mobility and operations of military land vehicles in northern terrain continue both in-house and under contract by the Defence Research Establishment Suffield (DRES). Specific activities include investigations of the mechanics of terrain-behicle interactions with reference to snow and muskeg, terrain analysis and starting and operation of military vehicles in cold regions.

The thermal physiology program at the Defence and Civil Institute of Environmental Medicine (DCIEM) investigates the response of the human body to exposure to cold in both air and water. Projects completed in 1983/84 include one which demonstrated that greater amounts of muscle glycogen are used to perform low intensity exercise in the cold than in a temperate climate. This suggests a possible requirement for special high carbohydrate diets or a supplement to the military ration in cold climates.

A study completed this year found no variation in the response of the thermoregulatory system to a cold stress administered at different times during the 24-hour cycle. This finding is important if sustained operations are to be conducted in cold climates. Contract research is underway to investigate the effects of caffeine analogues on cold tolerance and to induce adaptation by repeated cold water immersions.

A team from DCIEM (one Defence Scientist and one CF Pilot) has just completed a study of the cold stress experienced by 440 Sqn flying the Twin Otter out of Yellowknife in resupply missions to northern bases. Recommendations of the report will concern new clothing, the CF Supply System, and changes to refueling techniques.

On-going research projects at RMC/MERG included studies of: the enhanced freeze-thaw resistance of concrete; the construction of pavements over highly compressible terrain; soil stabilization for roads and runways in the North; the geothermal characteristics of continuous and discontinuous permafrost in the Canadian Arctic; waste water treatment in arctic regions involving field work at Alert; and extension of a geothermal model to soil conditions at Alert.

Plans 1984-85

Personnel

It is expected that Canadian Forces recruiting activity in the North will be intensified in terms of frequency, duration of stay and numbers of communities visited.

A Native Cultural Awareness Course for 30 persons is planned at CFB Trenton.

Maritime Forces

Aurora sovereignty and surveillance patrols will continue and will involve approximately 500 hours flying time. Support to other government agencies will be provided whenever practicable.

Land Forces

Land forces activities will include further communications exercises, adventure training expeditions and a number of company-level exercises.

Air Forces

Northern activities for air forces are expected to continue at their current level. Hercules aircraft will provide regulatory scheduled service to Alert, Inuvik, Yellowknife and Whitehorse. These aircraft will also be used during the spring, summer, and early fall to airlift supplies to Alert and to support various land force exercises.

Research and Development

The DREP arctic season will involve expeditions to Yelverton Bay and Nansen Sound in May and August to carry out acoustic measurements and to Assistance Bay (south Cornwallis Island) in April and August to perform geomagnetic activity measurements. Annual maintenance will be done at DREP camps in Barrow Strait and Jones Sound in August.

DREV will continue service life trials of the CRV7 rocket motor, involving storage of motors at CFS Alert, until approximately 1990. Prototype development and field testing will be carried out on a smoke marker for use in military search and rescue operations in the arctic environment.

DRES will continue mobility research related to military land vehicles. This will include work on northern terrain transects.

Battery research will continue. Climatic evaluations and field trials will be conducted on several battery applications. Trials will also be conducted on a variety of northern clothing and protective equipment concentrating on laboratory appraisal of the insulative quality of arctic sleeping bags and clothing.

Research aimed at enhancing the protection and performance of Canadian Forces personnel will continue. In addition to many in-house projects, work on several research contracts will begin soon utilizing the expertise available in a number of Canadian universities. These include calorimetry studies to validate the use of heat flux transducers in measuring body heat losses in field studies, and further animal and human studies in the interactions between body biochemistry, metabolism, and heat production/heat loss.

In continuation of the Teal Ruby experiment, a joint Canada/US exercise will be held in the Mackenzie Delta area and the Beaufort Sea. The operation will be based at Inuvik (Canada) and Fairbanks (US).

Research Contracts 1983-84

Duracell Canada Ltd.: Military lithium-sulphur dioxide primary battery (DREO).

Carleton University: Development of a method for predicting offroad performance of tracked vehicles (DRES).

Varta Batteries, Toronto: Development of improved lead acid vehicle battery (DREO).

Fulman Batteries, Louisville, P.Q. Development of improved lead acid vehicle battery (DREO).

McGill University: Mobility model development terrain characteristics (DRES).

McGill University: Traction mechanics model for evaluating mobility of wheeled vehicles (DRES).

University of Toronto: Mechanisms regarding fat loss in the cold (DCIEM).

University of Toronto: Fat carbohydrate - protien shunts during fat loss induced by exercise in the cold (DCIEM).

Université Laval: Heat production in humans during cold exercise (DCIEM).

University of Toronto: Cold adaptation induced by cold water (DCIEM).

Memorial University: Heat flux transducers and calorimetry (DCIEM).

University of Alberta: Improved cold tolerance by aminophylline (DCIEM).

University of Alberta: Heat production after aminophylline administration (DCIEM).

Computing Devices of Canada: Analysis of various ELF detection algorithms (DREP).

Computing Devices of Canada: Advanced ELF noise cancellation studies (DREP).

Computing Devices of Canada: Investigation of algorithms (DREP).

Barrodale Computing Services Ltd.: Investigation of daily fluctuations of magnetic micropulsations (DREP).

Sonoquest Advanced Ultrasonics Research: Seismic-acoustic ultrasonic modelling (DREP).

Inverse Theory and Application Inc.: Analysis of single-shot seismographs (DREP).

University of Calgary: Investigation of the age of Ward Hunt ice shelf (DREP).

National Energy Board

Economic Function: General Government Services

Responsibilities

Under the National Energy Board Act of 1959 and subsequent amendments, the Board has two principal roles. The first is to regulate specific areas of the oil, gas, and electrical utility industries in the public interest. The second is to advise the government on the development and use of energy resources.

The Board is a regulatory body, granting, with the approval of the Governor-in-Council, certificates of public convenience and necessity for the construction and operation of interprovincial and international oil, gas and petroleum products pipelines, and international and designated interprovincial power lines. It issues licences authorizing the export of oil, gas and electric power and the import of gas and heavy fuel oil. The Board issues safety orders for pipelines, regulates the tolls, tariffs and accounting practices of the oil and gas pipeline companies under the Board's jurisdiction, and regulates pipeline utility crossings.

In its advisory role and on its own initiative, the Board may hold inquiries into particular aspects of the energy situation and prepare reports for the information of the government, of Parliament, and of the general public. The Board also carries out studies and prepares reports at the request of the Minister of Energy, Mines and Resources.

In addition, the Board administers certain provisions of the Energy Administration Act, namely the imposition and collection of a charge on the export of crude oil and certain petroleum products and the administration of the price of natural gas in interprovincial and export trade.

Northern Pipeline Act

The Northern Pipeline Act, passed on 12 April 1978, provided the authority for the construction of the natural gas pipeline in Canada along the Alaska Highway, as well as for the creation of the Northern Pipeline Agency to oversee the construction of the pipeline. Certain terms and conditions in the legislation require the company to seek various approvals from the Board and the Minister responsible for the Northern Pipeline Act.

The Board's responsibilities relate mainly to financing and tariffs, approval of the pipe specifications, granting of leave to open orders and regulation of the operation of the line.

Review 1983-84

Worldwide uncertainity with respect to energy prospects generally had an impact in a variety of ways on matters before the Board. For example, the hearing on the Arctic Pilot Project was adjourned to provide its sponsors with an opportunity to investigate prospective European markets for liquified natural gas (LNG). With the fulfillment of the socio-economic and environment terms and conditions previously laid down, final approval was given to construction of the Interprovincial oil pipeline from Norman Wells in the N.W.T. to Zama, Alberta.

During 1983, the Board also initiated a major review of its regulations related to the information required in applications filed with the Board, its Rules of Practice and Procedure, and the regulations for the safety and design of pipelines. In addition, it has been working closely with representatives of industry and the Canada Oil and Gas lands Administration in developing new regulations to govern offshore pipeline construction and operation.

A new staff study was launched for the purpose of updating the Board's 1981 forecast of Energy Supply and Demand to the Year 2000 to take account of new conditions and circumstances. The Board is expected to publish its new report in the summer of 1984. Among other major initiatives undertaken by the Board in 1983 was an expansion of its public communications program. The Board continued to issue its quarterly Regulatory Agenda, a comprehensive report on the status of its regulatory activities, and started publishing Information Bulletins on a wide variety of the Board's functions and activities to encourage a greater participation, understanding and awareness among public interest groups and industry affected by its decisions.

Public Hearings

During the period under review, the Board conducted public hearings in several locations across Canada. The following are highlights of hearings on matters and projects that affect developments in northern Canada.

Northern Canada Power Commission (NCPC)

In January of 1983, the Minister of Indian and Northern Affairs asked the Minister of Energy, Mines and Resources, to request the Board to advise him on a number of aspects of the operations of the Northern Canada Power Commission.[1] These included cost of service, rate design, general principles of ratemaking, and the regulation of the NCPC.

The Board held a series of public hearings in June and July in nine communities in the two territories, and issued its report in October 1983.

The Board recommended that all changes proposed in its report become effective 1 April 1985. This date was selected to provide sufficient time for completion of all steps necessary to implement a rate regulation scheme.

Further to the Board's recommendations, Indian and Northern Affairs Minister John Munro announced, on 20 February 1984, major decisions affecting the future of the NCPC, including "...the regulation of the NCPC by a Panel of the National Energy Board", territorial participation in the regulation of these rates and the phased relocation of NCPC headquarters to Yellowknife.

[1] The Commission, a federally owned Crown corporation generates, transmits and distributes electricity from hydro and diesel plants in the Yukon and Northwest Territories.

Arctic Pilot Project

In February of 1982, the Board has commenced a hearing on an application by Arctic Pilot Project Inc. for the construction of natural gas pipeline and liquefaction plant on Melville Island in the Arctic, the transportation of the liquefied natural gas (LNG) in ice-breaking tankers to an eastern Canadian port, where it would be regasified, and finally the export of the natural gas by displacement to the United States.

In late July 1982, the sponsors of the Arctic Pilot Project announced that they were investigating the possibility of selling the LNG to European markets as an alternative to the U.S. market. As a result, TransCanada PipeLines requested an indefinite adjournment of its application to construct the regasification terminal in Eastern Canada because export to Europe would make the construction of the regasification facility unnecessary. The Board granted this request and on 31 August 1982 adjourned the entire proceeding.

In June 1983, the Board directed the project sponsors to submit their views by 1 December with respect to the future conduct of the Arctic Pilot Project proceedings and to address in particular whether the present status should be maintained or whether the proceedings should be discontinued. In their reply, the sponsors submitted that the present status of the proceedings should be maintained. In March 1984, the Board asked the sponsors and other parties for their views on whether the application should be dismissed.

Interprovincial Pipe Line (Norman Wells)

In 1982, a certificate was issued to Interprovincial Pipe Line (NW) Ltd. to construct approximately 866 kilometres of an oil and gas pipeline extending from Norman Wells, in the N.W.T. to Zama Lake in northern Alberta.

Originally, IPL (NW) planned to complete the pipeline by the end of 1983 and to start operations in early 1984. However, this schedule changed when on 30 July 1981 the Government announced in approving the project, that it required a two-year delay on commencement of field work and a two-and-a-half-year delay on commencement of pipeline construction.

During 1983, the Board continued its review of reports filed by Interprovincial Pipeline (NW) Ltd. concerning geotechnical, environmental and engineering issues. Following an intensive review of these reports, leave-to-construct this line was issued by the Board on 10 June 1983. The Environmental Protection Plan for construction was approved on 2 November 1983 following review by the Board. All construction activities were closely monitored by the Board during the year.

Information

The Board's 1983 Annual Report published in April 1984 provides a more comprehensive account of the Board's activities in the past year. This and other publications on the Board are available from NEB Information Services, Ottawa K1A 0E5. Phone: (613) 593-6936.

National Film Board

Economic Function:[1]

Responsibilities

The production of motion pictures, film loops, filmstrips, slide sets and still photo exhibits about the Canadian North, its peoples and their activities, its industries, resources, and institutions; the distribution of these materials in Canada and abroad; the distribution in the North of such materials interpreting Canada and exploring issues of National interest; counsel to federal government agencies concerning the application of audio-visual media and the planning, production and distribution of departmental films for information, instruction, training and cultural purposes.

Review 1983-84

During the year, the National Film Board continued its assistance to the Nunatsiakmiut Society of Frobisher Bay, N.W.T. Nunatsiakmiut produced its first 16mm film BETWEEN THE TWO OF US, a forty-minute production in colour. The NFB provided all technical services required to complete the film. Based on the success of the initial filming, Nunatsiakmiut began work on three additional half-hour films on Arctic education. Again, the NFB provided technical support including processing, mixing, titles and completion services. The three films were scheduled for telecast by CBC Yellowknife in March 1984.

The NFB continued to provide support to Cree Communications Societies in the Quebec James Bay area. The Mistassini Lake Communications Society began a program to version NFB titles into the Cree language and started initial research with a view to establishing production facilities in the entire James Bay region. The NFB provided consultative assistance to the Cree Communications Society to launch their research program to survey the communications needs of residents of the area.

The NFB began a production on the ecology of sea ice, THE EDGE OF ICE. Filming was done on Baffin Island. Production personnel were drawn from the Nunatsiakmiut Society in the first joint venture of its kind with the NFB. This major film project will be continued in 1984-85.

NFB Crew filming at Virginia Falls, Nahanni River.

During September, 1983, a Film Board crew filmed extensively throughout both the Northwest and Yukon Territories. The Distribution representative collaborated in research for material gathered for the film RIVER JOURNEY (AU FIL DE L'EAU), a 15-minute IMAX film to be screened at the Louisiana World's Exposition in New Orleans from May 12 to the end of October, 1984. Commissioned by the Department of External Affairs to produce a film that would explore the theme of the Fair - "Rivers - Fresh Water as a Way of Life" - the crew filmed in the Mackenzie Delta, Porcupine, Bell, Little Bell and Nahanni Rivers as well as the Richardson Mountains.

The Multi-Media Studio released two slide sets during 1983-84. PREHISTORY OF NEWFOUNDLAND AND LABRADOR is Volume 67 in the on-going series, Canada's Visual History, co-sponsored by the National Museum of Man, National Museums of Canada.

[1] National Film Board expenditures are *not* reported in Annual Northern Expenditure Plan.

Whitehorse/Yellowknife, part of the Canadian Cities from the Air Series, was co-sponsored by External Affairs, Canada.

An English version of *Debout sur leur terres (Our Land, Our Truth)* and French versions of *Beyond the Frontier (Aux limites du possible)* and *Charting the Frozen Sea (La mer de Beaufort)* were completed in 1983.

Northern B.C. and the Yukon

Film service to Northern B.C. and the Yukon territory is provided by an NFB library in Prince George and a library in Whitehorse operated by the Yukon Department of Heritage and Cultural Resources. The Yukon library is provided prints of NFB titles at cost; prints of most federal department sponsored titles are also deposited at Departmental expense. These two libraries provided service to the extent of 24,000 bookings during 1983/84. In addition, backup service was provided by the NFB regional office in Vancouver.

The provincially owned and operated Television Broadcast Centre - "Knowledge Network" - services the whole of B.C. and the southern half of the Yukon. Recent surveys have shown a considerable audience in the northern part of the service. During the report year there were more than 1300 telecasts of NFB films.

The Yukon library has begun to build a collection of videotapes and is servicing a growing demand for videocassettes.

Northwest Territories

The Edmonton NFB office, which services Yellowknife and the Western N.W.T., coordinated public screenings and commercial activities in 1983-84 as well as continuing to offer a film loan library to the area.

In collaboration with CBC North, the Edmonton office organized a major film festival during Inuvik's 25th Anniversary celebrations in July. The festival, which was free to the public, was held over a five-day period in the "Ingamo Hall" of the Native Friendship Centre. The theme of the festival was "60 Years of the North on Film", and programmed 'Northern' titles from the NFB archives in conjunction with many new releases. One of these, *The Last Mooseskin Boat*, was premiered at the festival. Six privately produced films were also included in the program consisting of 30 films. Crowds were enthusiastic for every screening, with some evenings resulting in 'standing room only'. One thousand people attended the film festival over the five-day period.

The Last Mooseskin Boat was also presented in Yellowknife at a public screening in October attended by about 300 citizens. This screening was organized by the Department of Information of the Government of the N.W.T. and the Edmonton Office of the NFB.

On the commercial front, the Edmonton office researched the science curriculum of the N.W.T. Department of Education and provided about 15 selected titles for preview to purchase for a meeting of educational resource centre directors in May, 1983. The material was well received. Thirty NFB titles were purchased during the period ending March, 1984, the majority of these on video format.

The NFB office in Ottawa, which serves the Eastern Arctic, maintains a library of approximately 1,200 prints for use exclusively in the North. In addition, prints are made available from the regular Ottawa inventory on an as required basis. Eight Hundred and Sixty (860) films were booked by users in the Eastern Arctic in 1983.

Plans 1984-85

Plans are underway to assist with an Inuit Broadcasting Corporation drama workshop to be held in Cambridge Bay in April of 1984. Participants will include several people from the Nunatsiakmiut Society.

The Atlantic Studio filmed the Inuit Circumpolar Conference held in Frobisher Bay during July, 1983; a half-hour film based solely on the Conference will likely be forthcoming in 1984.

The Multi-Media Studio will have several works in progress during 1984-85. *Canada's High Arctic Series* will consist of 5 sound filmstrips for junior secondary and secondary level. *Toonik Time*, 1 sound filmstrip for primary and junior level, part of Canadian Holidays and Festivals Series. *Minnie Freeman*, 1 sound filmstrip, part of the on-going Between Cultures series, based on Minnie Aodla Freeman's book, "Life Among the Qalunnat"; artwork by Alootook Ipellie. *Life Among The Padlimiut Eskomo*, 2 or 3 sound filmstrips recording life with the Caribou Eskimo, 1933-1944. *Rush to the Klondike*, 1 sound filmstrip, part of the "Oral History Series". *Native Communities*, a series of sound filmstrips for use at the secondary school level; one title of this series will be located in the Northwest Territories.

The Edmonton office has now finalized, at the request of the N.W.T. Department of Education, a series of preview meetings for Yellowknife in May. The selection of product will centre on films for use in Values Education for Secondary Audiences. The specific themes proposed are: Drug and alcohol-related problems; family violence and life skills. Further, the Yellowknife centre has proposed and received our agreement that this library, with an inventory of 3,400 titles, offer a selection of NFB films to the North by being granted a repository status by NFB for the film selected. Production selection and evaluation is now underway. The new service will be in operation by September 15, 1984.

National Museums of Canada

National Programmes

Economic Function: Culture and Recreation

Canadian Conservation Institute

Responsibilities
Through its central laboratory in Ottawa and its Mobile Laboratory Programme, CCI provides to publicly-owned museums and art galleries across Canada services relating all aspects of artifact conservation.

Review 1983-84
Through CCI's Training and Information Division, a week long Care of Collections Seminar was held in the Yukon, sponsored by the Yukon Historical and Museums Association. These seminars are designed to advise museum personnel on the care, handling, storage and display of artifacts in their collections. Emphasis was placed this year on leather and textile artifacts. Following the seminar, several museums received advisory visits.

CCI's Archaeology Division provided conservation assistance at the Thule Eskimo Site at Cache Point in the Northwest Territories. The archaeological excavation of this site is administered by the Northern Heritage Society in conjunction with the Prince of Wales Northern Heritage Centre. Assistance was provided with the registration, field treatment, safekeeping and transportation of artifacts found on the site. Two hundred objects requiring specialized treatment were sent to CCI.

Treatment of 68 waterlogged wood and baleen artifacts from the archaeological site on Herschel Island, Yukon Territory, was completed.

Plans 1984-85
CCI plans to send a conservator to Cache Point again this year. Work will also continue on the treatment of artifacts recovered during 1983. The treatment of artifacts recovered during the 1978 excavations at Dealy Island will continue.

Care of Collections seminars will be offered again in the Yukon and also in the Northwest Territories. CCI's most recent publication *CCI Notes*, which also deals with care of collections, will be distributed free to all museums in both the Yukon and the Northwest Territories.

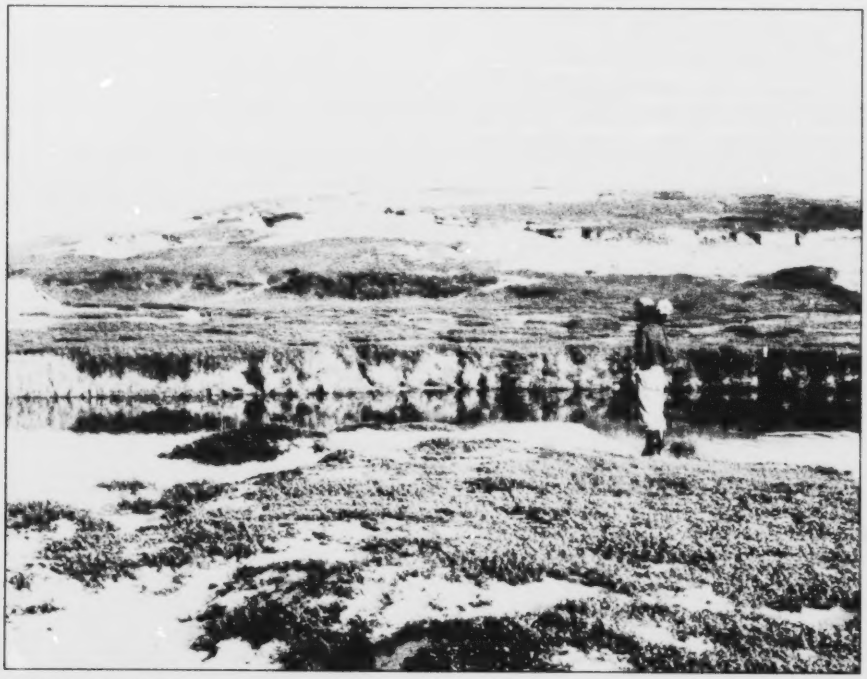
Conservator at CCI working on a Baleen net from Cache Point, N.W.T. - Photo credit: CCI

Museum Assistance Programmes

Responsibilities
The Museum Assistance Programmes provide financial and technical assistance to non-profit museums and related institutions wishing to participate in the accomplishment of the objectives of the National Museum Policy. The objectives of this policy are to preserve the collections and artifacts which reflect Canada's cultural heritage, and to increase public access to this heritage. Assistance is available towards the registration of collections; the training of museum personnel; the preparation, production and circulation of exhibitions; the employment of conservators; the purchase of preservation - related equipment; the upgrading of facilities; planning and special projects; and the public programming activities of Associate Museums and National Exhibition Centres.

Review of 1983-84 for N.W.T.
A grant of up to $20,000 was awarded to the Northern Life Museum and National Exhibition Centre at Fort Smith for its 1983-84 public programming activities.

The final payment of $6,000 for a grant of up to $23,900 was released to the Prince of Wales Northern Heritage Centre in Yellowknife towards the registration of the Centre's ethnology collection.



Looking south over KdLw-1, a multi-component stratified archaeological site in the east-central District of Mackenzie, NWT. Upper sandy portion of hill had Pre-Dorset levels dating ca. 1500 B.C., while lower tundra portion had Taltheilei levels dating 400 B.C. to Historic trapping era.

Plan for 1984-85, N.W.T.

The Northern Life Museum and National Exhibition Centre at Fort Smith will receive a grant of $21,900 for its 1984-85 public programming activities.

Payment of $17,700 for a grant of up to $32,200 is committed to the Prince of Wales Northern Heritage Centre in Yellowknife under the Registration Assistance Programme towards the registration of the Centre's ethnology collection.

A grant of up to $3,900 is committed to the Nunatta Sunaqutangit Museum Society at Frobisher Bay under the Upgrading and Equipment Assistance Programme towards the purchase of collections storage equipment.

Plan for 1984-85, Yukon

A grant of up to $24,600 has been committed to the Dawson City Museum and Historical Society under the Upgrading and Equipment Assistance Programme towards a planning study.

A grant of up to $22,500 will go to the MacBride Museum Society in Whitehorse under the Upgrading and Equipment Assistance Programme towards a planning study.

National Museum of Man

Canadian Ethnology Service

Responsibilities

The Canadian Ethnology Service documents the cultural heritage of the aboriginal peoples of Canada. This documentation includes research, collections, analysis and dissemination of information on the ethnographic, linguistic and material culture of the Indian, Inuit and Méthis peoples of the Yukon and Northwest Territories.

Review 1983-84

Staff research concentrated on Athapaskan land use and housing and on Labrador Inuit ethnohistory and material culture. Research projects contracted through the Ethnographic Research Field Contract programme included: recording and comparative analysis of oral narratives of the Tlingit of Atlin, British Columbia and Athapaskans of the southern Yukon; study of women's roles within Tahltan society at Whitehorse and various other communities and the recording of oral history pertaining to Inuit whaling activities in the communities of Repulse Bay, Rankin Inlet, Baker Lake and Chesterfield Inlet.

Plans 1984-85

Long-range staff research will result in the completion of three major publications, two on Athapaskan housing and culture change and one on Labrador Inuit material culture. Field contract research will concentrate on traditional ethnography of the Tutchone Athapaskans in the vicinity of Beaver Creek, Burwash Landing, Pelly Crossing and Mayo, Yukon Territory. In addition, the traditional relationships between the inland Tlingit, Kaska and Tahltan Athapaskans in the vicinity of Watson Lake and Teslin, Yukon Territory and Atlin and Telegraph Creek, British Columbia will be investigated. Field research will attempt to clarify the social relationships of the Southern Tutchone of Aishihik with the people of White River, Carmacks and Fort Selkirk, Yukon Territory.

Archaeological Survey of Canada

Responsibilities

The Survey undertakes research and rescue archaeology pertaining to the prehistoric occupation of Canada.

Review 1983-84

The 1983 field-season saw: (1) the continuation of investigations at the Bluefish Caves locality and of general archaeological and paleonvironmental survey activities in the Porcupine River drainage area, northern Yukon Territory, and (2), completion of the preliminary archaeological inventory of the Yukon Coastal Plain.

Bluefish Caves Investigations and Related Surveys

This work was carried out with support from the Polar Continental Shelf Project, the Yukon Government, and with the collaboration of the people of Old Crow. Lasting from mid-June to mid-August, it was directed at expanding excavations at Bluefish Caves I, II and III.

Results included:

- discovery inside Bluefish Cave II of a small series of lithic artifacts in association with Late Pleistocene faunal remains dated at between 10,000 and 18,000 years ago, and confirmation that some of these bone elements bear traces of butchering activities, thus making the Bluefish Caves locality one of the most ancient archaeological sites in the New World;
- confirmation of the existence along the southern margins of the Porcupine River basin of an extensive series of Karst features - some of which are still active - that offer a great potential for research advances in the fields of Late Pleistocene Beringian archaeology and paleoecology;
- discovery in the Old Crow Flats of a small series of traditional fish camp sites which, when further investigated, will greatly add to our understanding of this poorly known, albeit important, facet of late prehistoric and early historic Vunta Kutchin - Athapaskan land use.

Yukon Coast Archaeological Inventory

This Inventory represents the continuation of work initiated in the summer of 1982, partly on behalf of the Yukon Government, and in the context of planned northern hydrocarbon-related developments. The survey (mostly aerial with a series of ground checks) was carried out in early August and dealt principally with the Beaufort Sea littoral between King Point and the delta of the Firth River. Two proposed "transportation corridors" located between Kay Point/Babbage River and Stokes Point, within the Coastal Plain itself, were briefly checked.

Field excavations were conducted on a site, found in 1981, near Mosquito Lake in the Mackenzie District, N.W.T. The site, which covered the entire north part of a hill, revealed many tools and artifacts, including Proto-Historic Chipewyan, Lake, Middle and Early Taltheili, Pre-Dorset components as well as some which could not be assigned.

A varied programme of research was undertaken in the southern and central Yukon territory, and included principally a survey in the Tatchun-Frenchman Lake area near Carmacks, test excavations to determine the nature of remains at the historic Ft. Reliance site located north of Dawson, and clearance of Alaska Highway reconstruction right of way west of Whitehorse.

The last mentioned project, which was done at the request of and was supported by the Department of Public Works, resulted in minor, isolated finds.

The Frenchman-Tatchun Lake survey examined sites previously reported in a survey done by a consulting firm in 1981 for the Northern Canada Power Commission. One of the sites at Frenchman Lake was found to be more than an acre in extent but archaeological deposits are very thin and dispersed. At another site, located between the two lakes, a microblade production workshop was excavated. This activity locus, only a few metres in extent, yielded a relatively pure technological assemblage illustrating the various steps in the production of microblades, a very specialized technique of particular interest to archaeologists.

Ft. Reliance was established by François Mercier in 1874 for the Alaska Commercial Company. Actual construction and management of the trading post over most of its duration (1874-1886) was by Leroy N. "Jack" McQuesten. Among other northern pioneers associated with the post are A. Mayo, A. Harper and J. Ladue. It was previously known that surface pits, historic artifacts, and prehistoric or contact-period stone artifacts existed at the site, but no excavations had been made to fully determine the condition of the site and its value for future research and public historical appreciation. The site was found to be in good condition, although part of its face along the Yukon River has been lost to erosion. The foundations of most of the original trading post cabins appear to be present together with other structures including a number of semisubterranean house depressions which it is thought were occupied by Han Indians. The houses, portions of which were excavated, are contemporary with the trading post. Small numbers of stone artifacts also were found at several locations. These largely predate the trading post - by how many decades or centuries it is not known. Considering its intact condition and the presence of structural remains and artifacts, the site may be one of the most important ones of its kind in northwestern Canada.

An archaeological reconnaissance of the lower Peel and Arctic Red Rivers, and of the Mackenzie River between Arctic Red and the Delta was made. Ten sites were found, all of them relating to the late prehistoric and historic periods. Fluvial processes seem to be responsible for the paucity of archaeological remains in this low-lying, poorly drained area.

Plans 1984-85
Further fieldwork, especially at the Bluefish Caves and in the general vicinity is not contemplated until 1985, following the processing of the large amount of information that has been obtained in 1983.

In the course of the next field season, archaeological surveys and excavations in the Anderson Plain area will be done. Reconnaissance in the lower Mackenzie area, concentrating on a series of small lakes on higher ground north of Travaillant Lake, will be continued.

Archaeological investigations in the Cape Bathurst and Devon Island areas, N.W.T. will be carried out.

National Museum of Natural Sciences

Vertebrate Zoology Division

Responsibilities
The Vertebrate Zoology Division contributes to the knowledge of animal species in Canada through comprehensive faunal surveys, field research programs, the maintenance of important collections, and research in systematics, taxonomy, and zoogeography.

The Vertebrate Ethology Section undertakes studies of the behaviour of vertebrates, particularly birds and mammals. Since 1968, this section has carried out studies of the relationships between species of arctic animals and the behavioural adaptations that enable them to survive in high arctic environments. Most of the field research has taken place at the National Museum of Natural Sciences High Arctic Research Station at Polar Bear Pass on Bathurst Island, Northwest Territories.

Review 1983-84
The Vertebrate Ethology Section conducted an intensive banding program of Ivory Gulls. Logistic support was provided by the Polar Continental Shelf Project, Department of Energy, Mines and Resources. Over 500 Ivory Gulls were banded at Resolute Bay, Grise Fiord, Seymour Island, and Brodeur Peninsula from June to August and new colonies were discovered on Ellesmere Island, Devon Island, and Brodeur Peninsula. The glaciers and ice fields north of Makinson Inlet, Ellesmere Island, and the desert plateaus of Brodeur Peninsula can now be defined as very important sites of Ivory Gull production in the eastern Arctic.

Returns from the banded birds are being received from west Greenland.

Plans 1984-85
Plans are to continue the Ivory Gull banding program from mid-June through August. In addition some maintenance work will be undertaken at the National Museum of Natural Sciences High Arctic Research Station on Bathurst Island.

Paleobiology Division

Responsibilities
To collect Pleistocene vertebrate material from northern Canada and to curate and describe it in an attempt to reconstruct the vertebrate history of the region during the ice age.

Review 1983-84
Field work was carried out in the Dawson, Sixtymile and Carmacks areas of the Yukon Territory between July 30 and August 15. Many ice age vertebrates remains were collected, the most interesting of which are two camel bones, eight muskox skulls (of both the tundra and extinct helmeted muskox), a wolverine jaw, and an excellent grizzly bear skull from a new locality in the Carmacks area. The latter locality is the most southerly known in the Yukon for the typical late Wisconsin glacial fauna.

Plans 1984-85
Ice age vertebrate remains in the Old Crow, Dawson and Sixtymile areas of the Yukon will be collected during August and early September.

National Research Council Canada

Economic Function
Long Range Research

Herzberg Institute of Astrophysics

Review 1983-84

Continuous monitoring of cosmic ray intensities was carried out at Alert and Inuvik in the Northwest Territories as part of an international worldwide network program. The data are sent on a regular basis to the World Data Center for distribution to scientists.

Plans 1984-85

The cosmic ray monitoring program will continue at the same level.

Division of Mechanical Engineering

Hydraulics Laboratory

Review 1983-84

In conjunction with the Geotechnical Section of the Division of Building Research (NRC), the mechanical properties of the ice in the rubble-field around Tarsuit Island were measured. Tarsuit Island is Gulf/Dome's concrete retained island in the Beaufort Sea. The tests performed include measurements of the ice salinity, grain structure, uniaxial and confined (bi-axial) compressive strength and shear strength. The results of these tests were used to define the full failure envelope of granular sea ice over a wide range of loading rates.

The main carriage, rack and rails for the refrigerated model test basin in the Hydraulics Laboratory have now been manufactured and installed. The instrumentation, computer hardware and software has been set up and testing is underway. The first test series involved a study of the ice loads and parameters affecting the loads on a wide inclined plane. The results of the tests have been compared to two theoretical models, both of which underpredict the total load on the structure.

Plans 1984-85

The work on the ice loads on an inclined plane will be expanded to try to elucidate the interaction process and to define, both experimentally and analytically, the individual components of the load on the structure.

Tests of the indentation of a vertical indentor in an ice sheet will be undertaken in both model ice and freshwater ice in an attempt to determine the influence of differences in fracturing behaviour and the failure envelope of the ice on the overall loads on a vertical indentor.

Division of Chemistry

Review 1983-84

Measurements of the properties of gas hydrates in the laboratory have continued, to better characterize natural gas hydrate deposits which occur in northern Canada and at shallow depths below the sea botton. Theoretical modelling suggests that the extraordinarily low thermal conductivities of gas hydrates are related to scattering of heat-conducting phonons by the enclathrated molecules. The recent presence of gas hydrates in geologic sediments may be recognized by the presence of oxygen-18 enriched water. X-ray and neutron diffraction studies have shown that the structure II crystalline form is the stable hydrate both for very small guest molecules (e.g. krypton) and relatively large molecules (e.g. propane).

Plans 1984-85

Studies of gas hydrates will continue, with particular emphasis on calorimetric behaviour.

National Aeronautical Establishment

Northern Aerial Magnetic Reconnaissance

During late April and early May 1984, NAE's Convair 580 aircraft will carry out an aeromagnetic survey between the northern portion of Greenland and Ellesmere Island, and offshore eastern and southern Greenland.

A survey of a portion of Greenland's icecap during September 1984 is being considered but plans are indefinite at this time.

Division of Building Research

Review 1983-84

Several types of in situ test equipment and various methods generally used to obtain engineering parameters to the design, construction and evaluation of the performance of artificial drilling islands in the Beaufort Sea, were investigated. The field test program was carried out in the deltaic soils of the Fraser River which are similar to the deltaic soils in the Beaufort Sea. Engineering tests were also performed on clay samples from the Tarsiut drilling island in the Beaufort Sea.

Permafrost ground temperatures were measured at several sites in northern Manitoba and at Alert, N.W.T. Investigations were continued at several locations in the Y.T. and the N.W.T. to assess the long-term performance of insulated and uninsulated road and airfield embankments constructed on permafrost. Studies of bridge foundations at two locations on the Dempster Highway, Y.T. and of building foundations at Inuvik and Alert, N.W.T. were continued. Results obtained from field tests on pile foundations at Inuvik subjected to vibratory loadings were evaluated. Instrumentation was installed at test sites on Richards Island in the Mackenzie Delta and at Inuvik to study the electric potentials and currents developed during freezing of earth materials.

Preliminary tests on samples of saline soils obtained from the east coast of Baffin Island were done and a comprehensive laboratory test program to study the mechanical properties of frozen saline soils was begun. Laboratory studies of the thermal and mechanical properties and the deformation behaviour of frozen soils and model piles in frozen ground were continued. Laboratory research and numerical studies of frost action processes and the effects of frost heave on the operation of buried chilled gas pipelines in unfrozen areas of the discontinuous permafrost zone were continued.

Field measurements of the compressive strength of sea ice and its evolution from first-year to multi-year ice were carried out at Mould Bay. Laboratory measurements of strength and deformation of various ice types from the Arctic were continued. Observations of ice behaviour, including horizontal movements, strains and stresses, around Adams Island at the intersection of Navy Board Inlet and Lancaster Sound began. Laboratory investigations of the mechanical properties of ice rubble were begun. Field studies of grain structure and strains in first-year sea ice were carried out at Pond Inlet.

A laboratory program conducted for Public Works Canada to determine the strength and hydration characteristics of cement paste exposed to low temperatures and a marine environment was essentially completed.

During the year assistance was given to Energy, Mines and Resources Canada in the preparation of the new Northern Residential Standards for Energy Efficient Housing. The Standards will be issued, together with explanatory notes, in mid-1984.

Plans 1984-85

A marine geotechnical engineering program will be undertaken and will include the use of in situ freezing techniques to obtain undisturbed samples of foundation sands from an abandoned drilling island in the Beaufort Sea. The samples will be used to evaluate soil density and liquefaction potential in situ. Additional in situ tests with the cone, dilatometer and pressure meter will be carried out to correlate with density and liquefaction potential. A cooperative study with the NRC Hydraulic Laboratory will be undertaken to investigate the behaviour of model underwater berms subject to wave action.

Field studies will be continued on foundations for various structures and facilities build on permafrost and on the interaction between floating ice and structures. The program of permafrost ground temperature measurements at various locations will be continued. Field observations and measurements of ice interactions will be continued at Adams Island. In conjunction with ice breaking trials in the Eastern Arctic, field measurements of ice properties and response will be carried out.

Laboratory studies of frozen ground, frost action in soils, sea ice, multi-year ice and permafrost foundations will continue. The laboratory program to study the strength and deformation behaviour of frozen saline soils will be continued.

Investigations of the strength characteristics of cement paste subjected to sea water and low temperatures will be extended to include microstructural studies. Many DBR research projects on the thermal and moisture performance of buildings subjected to a cold climate environment are directly relevant to the construction and operation of housing and small buildings in the North and will be continued.

Continued support will be given to the development of the Northern Residential Standards and conducting seminars to explain certain related requirements. A Handbook of Northern Residential Construction will be prepared as a cooperative effort of CMHC, DIAND and DBR/NRC. The objective of the Handbook is to ensure the construction of durable and safe building.

Canada Centre for Space Science

1983-84 Rocket Program

Five sounding rockets were launched during February and March 1984 from the Churchill Research Range.

ARIES (Auroral Rocket and Imager Excitation Study) was a major program involving the launching of two Black Brant VIIIC rockets as part of an intensive auroral modelling campaign. The rockets designated ARIES "A" and ARIES "B" had exceptionally big payloads weighing 455 and 423 kilograms, and comprising sixteen and nineteen experiments respectively. Both rocket vehicles included the SAAB S-19 guidance system, and the payload included an Attitude Control System (ACS). Both payloads were recovered.

Equally important as the on-board rocket experiments, ground based measurements were made from Churchill and at two down-range ground observation sites, located at Lac Lee and Bird; 126 and 250 kilometers down-range respectively.

Two Nike Orion rockets and one Black Brant VB rocket were launched for NASA at Churchill this winter.

1984-85 Rocket Program

MARIE (Mechanism of Auroral-Region Ion Excitation) which was postponed in 1983/84 will be launched at the Churchill Research Range in December 1984. MARIE will involve the launching of the first three stage Black Brant X rocket from Churchill to study ion energization in the 500-1000 km region.

Two new rocket experiments were approved by the Scientific Advisory Committee for launching at the Churchill Research Range. WATERHOLE IV is a repeat of the Waterhole series involving the release of water vapour into a quiet auroral arc. COBRA is an experiment to measure the submillimeter cosmic background spectrum left by the "big bang".

SMERF (Solar Mesopheric Explorer Rocket Flight) is a Black Brant IIIA rocket which will be launched in May 1984 for the Atmospheric Environment Service of the Department of the Environment.

CANOPUS

CCSS is proceeding with the CANOPUS project, a network of unmanned geophysical observatories. Fifteen sites in the Northwest Territories and the northern parts of Saskatchewan, Manitoba and Ontario have been selected. When completed the network of stations will automatically measure changes in the Earth's magnetic and electric fields induced by solar particle precipitation.

Site preparation work at Rankin Inlet and Eskimo Point was completed during 1983. Instrumentation will be installed at these locations late in 1984. No further site work at northern locations is scheduled for 84/85.

National Aeronautical Establishment/Division of Energy

Wind Energy Program

A co-operative project to evaluate a 50 kW vertical axis wind turbine (VAWT) is proceeding under an agreement between the National Research Council and the Churchill Northern Study Center. The prototype wind energy conversion system was commissioned in November 1981 and is connected into the local electricity distribution network at Churchill, Manitoba. By the end of 1983 the system had operated for approximately 6200 hours and contributed about 66000 kWh to the community's electricity supply. the installation is one of several across Canada designed to evaluate the performance and operation of the NRC-developed VAWT under the environmental and other conditions prevailing at the various sites. This particular unit continues to provide information on the applicability of current VAWT designs to Northern climates.

The conversion of wind energy to electrical energy of considerable interest in the North because of the high cost of diesel fuel. Enquiries for similar projects in the Yukon and the Northwest Territories are being considered under the framework of the Federal/Territorial Agreement on Conservation and Renewable Energy Development, the Remote Communities Demonstration Program and in conjunction with the Northern Canada Power Commission.

Arctic Vessel and Marine Research Institute

Review 1983-84

The construction of the Arctic Vessel and Marine Research Institute's new laboratories in St. John's, Newfoundland continued. Phase I, the office complex, was completed at the end of 1982 and the ice tank, towing tank and seakeeping tank are due to be finished in late 1984. Installation of the major equipment, such as towing carriages and wavemakers will take place immediately afterwards and the commissioning phase is expected to be finished by the end of 1985.

Considerable effort has been expended during the past year to develop testing techniques to be used in the new facilities, particularly in the ice tank.

A small facility built in the Hydraulics Laboratory of N.R.C. in Ottawa has provided useful experience. A 1/40 scale model of a R-Class Icebreaker was tested in a wide range of ice conditions and the results have been compared with the already considerable bank of model and full scale data available for this ship.

AVMRI staff participated in full scale trials on several vessels operating in the Arctic. A new Doppler speed log was tested during trials of the US Coast Guard ship, Polar Star, during a trial off the west coast. Measurements of ice strain were made during ramming trials on the Kigoriak.

The Institute was involved in the evaluation of new bow designs proposed for the icebreaking bulk carrier "M.V. Arctic".

Experiments on the resistance, propulsion and seakeeping qualities of three alternative designs were carried out in the Ottawa towing tank. The AVMRI model was then made available for tests at Arctec Canada in Kanata, Ontario and in Hamburg and Finland.

A feasibility study to investigate the possibility of modelling the phenomenon of a ship ramming ice was begun. This study will review and summarize all relevant scientific and engineering information including laboratory data on impact and crushing of ice, corresponding field data on ice properties, available data on ship vibrations due to collision and on structural response. Relevant ice properties are being identified and scale effects being considered.

AVMRI staff members served on various committees and advisory boards, both national and international, making recommendations for the standardization of model and full scale testing of ships in ice and assisting in the establishments of standards and regulations for the safety of marine transportation in the Arctic environment.

Plans 1984-85

New personnel are being recruited to enable the Institute to meet the increased demands of operating the major national facility now being built in St. John's, and of responding to the needs of industry and other Government departments.

Projects related to the commissioning of the St. John's facilities will be given high priority so that they can be brought into operation as quickly as possible.

Involvement in several full scale trials is planned together with an increased level of activity on basic studies concerning ship/ice interactions.

Northern Canada Power Commission

Economic Function[1]

Business of the Commission

Northern Canada Power Commission (NCPC) is a Federal Crown Corporation which operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis. For this purpose, it is empowered to survey utility requirements, construct utility plants in the Northwest Territories (NWT), the Yukon Territory (YT) and, subject to approval of the Governor General in Council, elsewhere in Canada.

The Commission is the principal producer of electricity north of 60° and operates the main transmission networks in the Yukon and Northwest Territories. Heat, water and sewerage service utilities are operated at Inuvik, NWT. Wholesale heat supply is provided to the Northwest Territorial Government for distribution at Frobisher Bay. Residual heat recovery systems are presently operated at Cambridge Bay, Coppermine, Lac La Martre, Pelly Bay, Igloolik and Rankin Inlet in the NWT and at Dawson City, YT.

The Commission's head office is located at Edmonton, Alberta. Regional offices are located in Yellowknife, NWT and Whitehorse, YT.

The Authorizing Act requires that operations of the Commission shall be self sustaining within each rate zone as defined in the Act. Consequently, rates charged for utilities supplied must provide sufficient revenue to cover interest and principal payments on loans made to the Commission, operating, maintenance, administrative and all other expenses and contingency allowances.

The accounts of the Commission are subject to the audit of the Auditor General of Canada.

Review of 1983-84

During the 1983/84 fiscal year, the Commission provided retail electric utility service to 49 communities in the NWT and to 4 in the Yukon as well as to customers in Field, British Columbia. The Commission also supplied wholesale electrical energy to the local electrical distributers in Yellowknife, NWT and Whitehorse, Haines Junction, Ross River, Carmacks and Keno City in the Yukon. This service was provided from 7 hydro-electric plants and 52 diesel-electric plants located in the general vicinity of the communities which they serve.

National Energy Board Hearings and Recommendations

In January, 1983, the Hon. John Munro, Minister of Indian and Northern Affairs, asked the National Energy Board (NEB) to provide him with advice on a number of aspects of Northern Canada Power Commission's operations. These included determination of cost, rate design, general principles of rate making and the regulation of NCPC.

The NEB conducted a series of public hearings in 9 different communities throughout the two territories during June and July, 1983 in which NCPC participated.

In October, 1983, the National Energy Board recommended in a public report that a "duly appointed federal regulatory agency be given complete and final authority in establishing NCPC's annual revenue requirements for a given period, and in determining the cost-based rates associated therewith".

Other recommendations contained in the report are that:

- NCPC continue to operate as a single entity owned by the federal government, with the head office remaining in Edmonton;
- NCPC rates be based on the true costs of providing electricity to its customers in the north, with separate rate zones for areas supplied from hydro or diesel generation;
- some debt should be converted to equity;
- the proportion of debt that exists because of prior losses, and outstanding loans incurred in respect of assets no longer useful, should be forgiven.

The Board recommended that all changes proposed in its report become effective April 1, 1985. This date was selected to provide sufficient time for completion of all steps necessary to implement a rate regulation scheme.

Mr. Munro reviewed the NEB's recommendations and in February 1984 announced that cabinet had made several major decisions.

- NCPC will move its headquarters from Edmonton to Yellowknife. In addition, a small complement of senior staff will be relocated to Whitehorse. The move north is to be completed within 3 years.
- the Commission will be regulated by the National Energy Board. The NEB panel responsible for regulating NCPC will have 4 members, 2 of whom will be nominated by the NEB (one of whom will be the Chairman) and one member will be nominated by each Territorial Government.
- the Commission's Board of Directors will be expanded, with the addition of two new members.
- NCPC's rates should reflect the cost of service and that subsidy programs should be a separate item. The current subsidies provided by Canada, including the Federal Power Support Program, will be extended for one more year to March 31, 1985. During the coming year, the Government plans to study the question of Federal power subsidies.

[1] NCPC expenditures are *not* included in the Annual Northern Expenditure Plan's Economic Function table. A financial summary is however included in Appendix I to that part of this publication.

Pricing

In compliance with the 6/5 pricing restraint formula, all rate increases in the NWT and YT were restricted to 6% in April, 1983. In 1984, NCPC rates are expected to increase no more than 5% above the 1983/84 levels.

Generation and Sales

Total sales of electric energy in 1983/84 are expected to be 2,047,000,000 MJ, an 8.8% decline from 1982/83. Generation is expected to total 2,304,400,000 MJ in 1983/84, a drop of 8.6% from the previous year. The NWT share of total sales is anticipated to reach 1,308,600,000 MJ, a marginal decrease of 0.9% from 1982/83. In the YT, sales are expected to drop by 20.2% to 734,400,000 MJ in 1983/84. Generation of electric energy in the Northwest Territories and the Yukon Territory is expected to be 1,500,100,000 MJ and 799,560,000 MJ respectively in 1983384. These figures indicate a drop of 1.0% and 20.2% respectively from the previous fiscal year.

The non-coincidental peak demands in the NWT and YT are expected to be 79,302 kW and 46,866 kW respectively in 1983/84, which compares with 1982/83 non-coincidental peak demand of 79,163 kW and 60,849 kW respectively.

Capacity Expansion

Northern Canada Power Commission's generation system was expanded by approximately 1.8 MW in 1983/84 with the replacement of internal combustion units at Arctic Bay (0.12 MW), Fort Good Hope (0.15 MW), Fort Norman (0.20 MW), Lac La Martre (0.13 MW), Lake Harbour (0.12 MW), Pond Inlet (0.34 MW), and Tuktoyaktuk (0.74 MW). The Commission plans to increase its generation capacity in 1984/85 with the addition of 2.82 MW, by replacement of one combustion unit at Holman Island (0.22 MW), one at Sachs Harbour (0.10 MW), and the addition of one 2.5 MW unit at Fort Smith.

The construction of a fourth hydroelectric generating unit at Whitehorse, YT was completed by year end, adding approximately 20 MW to the system capacity.

Northern Pipeline Agency Canada

Economic Function: Transportation

Responsibilities

The Northern Pipeline Agency was established in April, 1978, with the proclamation of the Northern Pipeline Act. The Agency oversees the two basic objectives of the legislation: to facilitate planning and construction of the 3 240-km Canadian segment of the Alaska Highway Gas Pipeline and to regulate the project so as to maximize the economic, industrial and energy benefits for Canada; to minimize adverse social and environmental impacts; and to ensure that the system is safe and reliable.

The pipeline will carry natural gas from Alaska along a route which closely follows the Alaska Highway through Yukon and northeastern British Columbia before entering central Alberta. At Caroline, Alberta, the line to the United States branches into two legs, one running through southeastern British Columbia and the other through southwestern Saskatchewan. A future pipeline lateral along the route of the Dempster Highway, joining the main pipeline at Whitehorse, Yukon, would give Canada access to established reserves in the Mackenzie Delta and any new reserves that might be found in the Beaufort Sea.

Review 1983-84

As indicated in last year's report, the Canadian and U.S. pipeline sponsors stated in April, 1982, that current economic conditions precluded completion of the pipeline project by the planned date of 1987 and indicated they would continue to work to conclude the project by late 1989. Throughout the year under review, therefore, the activities of the Canadian company, Foothills Pipe Lines (Yukon) Ltd., and the Northern Pipeline Agency (NPA) were reduced significantly in order to keep pace with the delay in the project schedule.

Following the March, 1983 approval of the final routing of the pipeline through the Yukon, the federal government, in November, 1983, entered into an easement agreement with Foothills covering the right-of-way of the pipeline. The right-of-way is initially 240 metres wide and will subsequently be reduced in most areas to 40 metres following completion of construction of the pipeline.

The establishment of the final routing also enabled the Department of Indian Affairs to lift the freeze on land dispositions within an eight-kilometre corridor encompassing the pipeline route.

In October, 1983, the Governor in Council approved the reappointment of members to the Yukon Advisory Council for a two-year period, effective August 22, 1983. The Advisory Council was established in February, 1979, to advise the Minister on all matters relating to the planning and construction of the Alaska Highway Gas Pipeline Project in Yukon.

Plans 1984-85

With the continued hiatus in activities related to the Alaska Highway Gas Pipeline Project, the NPA has no specific plans for the forthcoming year.

Northern Transportation Company Limited

Economic Function[1]

Year in Review

Northern Transportation Company Limited transported 297,000 tonnes of marine cargo in 1983, slightly less than in the previous year. The most significant decrease occurred, as expected, in the Athabasca sector where traffic was down by 35%. The Mackenzie-Arctic sector was also marginally lower in 1983 as compared to 1982.

Exploration tonnage, both deck and bulk, for the Mackenzie River Delta and Beaufort Sea staging areas was down for the second consecutive year, due largely to increased competition from the West Coast, mainly by the exploration companies themselves.

Decreases in exploration tonnage to the Delta and the Beaufort Sea in 1983 were substantially offset by the movement of large quantities of cargo to Norman Wells related to the construction of a crude oil gathering system, drilling islands and the pipeline to Zama Lake, Alberta. In excess of 37,000 tonnes of deck cargo to Norman Wells and vicinity, including processing plant modules, drill rigs and supplies, and approximately 11,000 tonnes of transmission pipe was transported.

The Company also installed floating docks at the various construction sites and discharge and stockpiling operations were performed. Increased activity and persistent low water levels in the Norman Wells area necessitated the activition of a small vessel, the M.V. Radium Miner, for use as a yarding tug.

Ice and unfavourable weather generally delayed the commencement of operations in the Keewatin. The M.V. Keewatin left Churchill on July 20 for the first trip of the season, almost ten days later than normal. In spite of the late start, all cargo was delivered and the marine equipment was returned to home port for deactivation by October 8.

Increased demand for bulk petroleum products resulted in a 25% increase in tonnages in the Keewatin over the previous year.

Operations in the Athabasca sector began with a voyage from Fort McMurray to Fort Chipewyan on May 29. By October 2, all cargo had been delivered and the Company's one remaining vessel, the M.V. Radium Trader, was deactivated at Fitzgerald. She will be transferred to the Mackenzie system early next spring.

The Company's Athabasca service was discontinued at the end of the 1983 operating season, after almost fifty years of shipping out of Fort McMurray.

The Company maintained operations in 1982 and 1983 at the request of the Minister of Transport, but without the mining operations of Uranium City or any prospect of other industrial activity in the area, it was obvious that the traffic requirements of small communities such as Fort Chipewyan, Fond du Lac, and Stony Rapids could not sustain a viable service.

The Company inaugurated its new accommodation facility in Tuktoyaktuk in 1983. The new camp, named Ibiuk, which means "twin pingos", was officially opened by Mayor Vince Steen of Tuktoyaktuk on August 19. It provides comfortable and pleasant accommodations for the Company's employees based in Tuktoyaktuk and is a marked improvement over the previous facilities.

NTCL constructed a new terminal office in Hay River, conveniently located between the terminal entrance and the loading basin. The building offers vastly improved facilities for recruitment and training as well as modern shore and marine operations offices.

The introduction of new standards and procedures relating to fire detection and extinction, safety, oil pollution prevention, and handling of dangerous goods has necessitated the commitment of substantially more time and resources to training and upgrading equipment.

In May, the Company held a dangerous goods and oil spill control training course at Hay River. Seventy-six persons successfully completed the course. The course emphasized the need for a high degree of cooperation between industry and regional and local emergency response services in dealing with dangerous goods and contaminants.

Outlook

Initial tonnage projections for 1984 indicate a 14% decrease. Traffic is forecast to increase slightly in each of the two following years but not sufficiently to return to 1983 levels. There are several reasons for this less than optimistic outlook.

Recent pronouncements by industry and government leaders suggest that the oil and gas exploration activity in the Western Arctic will maintain its current momentum. However much comfort the stabilization of exploration activity may provide, it is also true that competition has increased significantly in recent years.

In consequence, a far greater effort is now required to retain share of market.

The West Coast resupply route to the Beaufort Sea will undoubtedly continue to be used to resupply large quantities of bulk petroleum product to the Western Arctic. Some erosion of deck cargo from the Mackenzie barging system is also inevitable, as was the case in 1983.

During the past two years, the Norman Wells island building and pipeline projects have served to offset to some extent the losses of cargo to the West Coast route, but these projects are nearing completion and no other major undertakings are anticipated within the next few years to bolster tonnages.

In 1984, Northern Transportation will be celebrating its fiftieth year of operation. In many respects, it will be a time for rejoicing and for reminiscing with pride about the past. It will also be a time to plan for the future, to turn obstacles into rewarding challenges.

[1] NTCL expenditures are not included in the Economic Function table of Annual Northern Expenditure Plan. However a financial summary is provided as an Appendix to that document.

Public Service Commission of Canada

Economic Function: General Government Services

Responsibilities

The Public Service Commission of Canada (PSC), a central agency accountable to Parliament for the administration of the *Public Service Employment Act* (PSEA), ensures that the merit principle is upheld in staffing actions. The PSC develops and administers standards for selection of candidates for positions in the Public Service; exercises regulatory powers to carry out and give effect to the PSEA, such as determining processes of personnel selection to ensure that the best interests of the Public Service are protected; provides and operates redress mechanisms regarding appointments to ensure that the merit principle is respected; and audits the manner in which staffing authority has been exercised.

The Commission administers the *Act* as it relates to the political activities of public servants, ensures equality of access to the Public Service for all Canadians, conducts and gives advice on training and development programs, and investigates discriminatory practices in the Public Service.

Review 1983-84

The Staffing Branch of the Public Service Commission, which has been fully operational in the Northwest Territories and the Yukon for over five years, continued to provide a full range of staffing services to federal departments operating north of 60°.

In 1983/84, the district staffing offices in Yellowknife and Whitehorse carried out recruitment activities within the provisions of the Staffing in the North policy with satisfactory results. Most appointments went to northern residents. The district offices provided employment information and counselling services to northern residents seeking career opportunities in the North.

Indigenous Participation Programs

Review 1983-84

The Indigenous Participation Programs continued to promote native employment and development in the north through the Office of Native Employment and the Northern Careers Program.

Native Employment coordinators located at district offices in Whitehorse and Yellowknife have a mandate to increase representation of native people at all levels in the Public Service. The success of this program rests primarily on public service managers, and for this reason, continuous efforts have been made to increase managerial awareness of government policy on native participation and to recruit native people to the federal Public Service.

The Northern Careers Program prepares northern native people for responsible positions in the federal Public Service in the north through individualized training and development programs of up to 24 months. The program is presently administered from Whitehorse and Yellowknife.

Since its establishment in 1974, over 350 northern native people have participated in the program. At December 1983, 58 native people were participating in the Program.

In July 1983, Treasury Board approved a new resourcing strategy to increase yearly participation in the program from 58 to 91 participants. Over the next two years, the program will be so modified that departments providing on-the-job training opportunities for participants will share equally with the Commission the cost of person-years and salaries of participants. The Commission received additional resources for the establishment of a third office in the eastern Arctic.

Plans for 1984-85

The Northern Careers Program will improve its service to the eastern Arctic by opening an office in Frobisher Bay in the fourth quarter of fiscal year 1984-85.

The Office of Native Employment will continue its efforts to increase participation of native people in the federal Public Service.

Public Works Canada

Responsibilities

Public Works Canada (PWC) is the largest construction and real property management organization in Canada. PWC provides a wide variety of architectural, engineering and construction services to other Government departments and agencies. It assists in planning and design work, investigating possible building sites and carrying out feasibility studies. The Department is also responsible for constructing and managing buildings, public utilities, highways, harbours and wharves. It also acquires and disposes of land and properties. In addition, PWC leases premises for the Government of Canada and supervises the renovation, maintenance and management of government buildings.

In the North, the Department is involved in housing and transportation. It provides accommodation for federal government employees and designs, constructs and maintains the ever-expanding highways system in the Yukon and the Northwest Territories. Through its dredging activities, PWC also keeps water transportation routes navigable in the North.

Western Region

Highway Construction Activities in 1983-84

Economic Function: Transportation

Highway construction was completed on the Liard Highway and on October 1, 1983 maintenance responsibilities were transferred to the Government of the Northwest Territories.

The superstructures on four concrete/steel bridges were completed during the summer and the bridges were opened to traffic. As well, trimming was completed on 50 kilometres of highway and surface reconditioning and application of crushed gravel was completed on 220 kilometres. Total construction expenditure was $2,700,000.

On the Mackenzie Highway a multiplate culvert failure was repaired at a cost of $380,000 and gravel crushing was near completion at year end at a cost of $400,000. Design of 15 kilometres of road in the vicinity of Wrigley was also completed.

The test embankment constructed in April, 1982 on the Inuvik-Tuktoyaktuk Highway was extended in April, 1983 and further monitoring of the section continued to assess the suitability of high ice content fine grained material for use in road construction.

Planned Highway Construction Activities in 1984-85

The Liard Highway will be officially opened on June 23, 1984. The only activity planned for the highway is hydro seeding of erosion susceptible areas and guiderail repairs.

On the Dempster Highway a contract is planned to proceed with a grade revision in the vicinity of kilometre 472. This grade revision is being done in order to alleviate snow accumulation problems in one right-of-way rock cut.

Pre-engineering survey and design work will begin again on the Inuvik-Tuktoyaktuk Highway. This will involve about one month of field work to survey revisions. The remainder of the time will be spent on completion of plans.

Treasury Board approval was received on March 29, 1984 to continue work on the Mackenzie Highway between Fort Simpson and Wrigley. It is expected that during this fiscal year construction will begin from Km 680 to Km 693 and on the Wrigley Access Road.

The estimated expenditure on the Northern Roads Program for 1984/85 is $2,600,000.

Marine Projects

Review 1983-84

Maintenance dredging on the MacKenzie River Waterway was carried out at a cost of $1,300,000.00.

Routine maintenance was continued on the public wharves throughout the MacKenzie system at a cost of $86,000.00.

Plans 1984-85

Maintenance dredging and maintenance of public wharves in the N.W.T. will continue under the direction of Transport Canada.

Pacific Region

Review 1983-84

Alaska Highway (Maintenance)

Routine maintenance on the Yukon portion of the Northwest Highway System (NWHS) continued under the terms of a joint agreement with the Government of Yukon. The maintenance program amounted to $12 Million, and included the application of some 158 km of bituminous surface treatment (a mixture of emulsified asphalt and crushed aggregate blotter).

Alaska Highway (Capital)

Capital program expenditures during 1983-84 accounted for almost $12 Million in the Yukon. Among the major projects undertaken during the course of the year were:

KM 1273-1292:
Project Description - Grading, culverts & base course
83-4 Expenditures - $3.6 Million
% Complete - 70%

KM 1308-1323:
Project Description - Grading, culverts & base course
83-4 Expenditures - $4.4 Million
% Complete - 100%

KM 1508-1522:
Project Description - Grading, culverts & base course
83-4 Expenditures - $1.5 Million
% Complete - 40%

In addition to standard capital and maintenance program activities, a further $260,000 were expanded on four separate right-of-way clearing projects funded through the federal New Employment Expansion and Development (NEED) Program.

Plans 1984-85
Although the capital budget approval has not been finalized as of this writing (4 April 84), it is anticipated that capital expenditure will approximate $13 Million. Major construction activities to be undertaken will include:

KM 1273-1292:
Project Description - Grading, culverts & base course
84-5 Expenditures - $1.5 Million

KM 1323-1346:
Project Description - Grading, culverts & base course
84-5 Expenditures - $4.0 Million

KM 1508-1522:
Project Description - Grading, culverts & base course
84-5 Expenditures - $1.0 Million

KM 1588-1603:
Project Description - Grading, culverts & base course
84-5 Expenditures - $3.2 Million

Work undertaken on behalf of other Government Departments

Department of Indian and Northern Affairs (DINA)

Review 1983-84
DINA spent on the order of $2.4 million on northern road construction in Pacific Region. These expenditures were distributed over the Dempster Highway, the Canol Road, the Nahanni Range Road, and the Liard Highway. The largest single category of expenditure involved approximately $1 million for geotechnical and design work on the Canol Road.

Plans 1984-85
DINA Highways budget is currently forecast at almost $4.5 million. Much of this will be directed to the Canol Road upgrading, including approximately $1.2 million for geotechnical and design work, plus some $2.3 million for grading and drainage activity between kilometre 255 and kilometre 265. A further $1 million will be applied to bridge construction on the Dempster Highway.

Parks Canada

Review 1983-84
Preliminary work on the establishment of an all terrain vehicle track into Kluane Park's Kaskawulsh Glacier accounted for $30,000.

Plans 1984-85
Forecast project expenditure amounts to about $410,000.

Work undertaken on behalf of other governments

Shakwak
The Shakwak Program, involving the re-construction of the Haines Road between Haines, Alaska and Haines Junction, Y.T. and onward to Beaver Creek at the Alaska - Yukon Border, has been affected by funding uncertainties in recent years. The project is being sponsored and funded by the United States, although capital expenditures on the Canadian portion of the road are being managed by PWC.

Review 1983-84
Almost $300,000 was spent on capital works on the Shakwak.

Plans 1984-85
American authorities released some $11 million (U.S.) to be applied to capital construction activities during 1984-85 and 1985-86 of this total, approximately $6 million (CDN.) is scheduled to be spent in 1984-85 for the purpose of grading, providing drainage, and laying down the base course between KM 96 and KM 123.

Western Region

Economic Function: General Government Services

Review 1983-84
Projects carried out for Health and Welfare Canada include:

- Renovations to the Nursing Station in Aklavik at a cost of $800,000.
- Construction of a new Nursing Station in Fort Norman at a cost of $900,000.
- Construction of a new Nursing Station in Fort Wrigley at a cost of $900,000.
- Mechanical Renovation in the General Hospital, Inuvik at a cost of $200,000.
- Preparation of the Design and Working Documents for the construction of new Nursing Stations in Sachs Harbour and Snowdrift.

Projects carried out for Indian and Northern Affairs include:

- Construction of a new District Operational Office Building in Yellowknife at a cost of $600,000.
- Preparation of the Design and Working Documents for a new District Operational Office Building in Fort Smith.
- Preparation of the Design and Working Documents for the new Government of Canada Building in Fort Smith for PWC.
- Preparation of Tender Documents and Tender Call for the Construction of Aircraft Hangars in Inuvik and Resolute Bay for Environment Canada.

Plans for 1984-85
Projects to be carried out for Health and Welfare Canada include:

- Construction of a new Nursing Station in Sachs Harbour at a cost of $1,500,000.

- Construction of a new Nursing Station in Snowdrift at a cost of $1,500,000.

- Construction of a new Nursing Station in Arctic Red River at a cost of $200,000.

- Preparation of the design and working documents for new Nursing Stations at Lac La Martre, Palatuk, Tuktoyaktuk, Fort Liard.

For Indian and Northern Affairs, construction of a new District Operational Office Building in Fort Smith at a cost of $750,000 is planned.

For Environment Canada, construction of new Aircraft Hangars in Inuvik and Resolute Bay at a cost of $6,000,000, will be carried out.

For Public Works Canada, construction of the new Government of Canada Building in Fort Smith at a cost of $4,000,000 is scheduled.

Other Construction

Two new RCMP married quarters in Tuktoyaktuk and one in Ft. Providence were constructed for $360,000 and $152,000, respectively. A garage/workshop/warehouse in Spence Bay; a garage/workshop in Rae and an emergency generator in Inuvik are under design for construction in 1984. New married quarters in Sachs Harbour are in design for construction in 1985.

Pacific Region

Accommodation

Review 1983-84
A new Customs facility and residence at Beaver Creek (Yukon - Alaska Border) was opened. Total cost exceeded $1.4 million. Beaver Creek, the major highway crossing between Yukon and Alaska, is exceptionally busy in summer.

Plans 1984-85
Renovations to the Government of Canada Building in Whitehorse costing in the order of $250,000 will begin. Replacement of the current steam boiler operation at the Takhini Office Complex costing over $300,000, will result in greater labour and energy efficiency.

Other Government Departments - Capital

Review 1983/84

Health and Welfare Canada

A new Health Centre at Carmacks was completed at a cost of $359,000.

Plans 1984-85
Work on nurses residences at Dawson City and Watson Lake will be well underway total value exceeds $900,000.

RCMP

A new detachment will be constructed at Mayo valued at more than $490,000.

Department of Regional Industrial Expansion

Economic Function: Economic Development - Other

Responsibilities

The federal Department of Regional Industrial Expansion (DRIE) is mandated to:

- stimulate national economic growth;
- reduce regional disparities through leverage of investment;
- promote industrial development and trade; and
- enhance the competitiveness of Canadian industry in world markets.

The primary objective of the Department, therefore, is to increase overall industrial, commercial and tourism activity in all parts of Canada and in the process, reduce economic disparity across Canada.

Further, the Department fosters a climate which encourages firms to be more internationally competitive.

Programs

1) Industrial Regional Development Program (IRDP)

Joining the Department of Industry, Trade and Commerce (ITC) and Regional Economic Expansion (REE) allowed for an extensive review of the financial assistance programs that were previously managed separately. Of major importance has been the creation of the Industrial and Regional Development Program (IRDP) which takes the best features of several former ITC and REE programs, adds a number of new elements and has greater flexibility. Although it is a national program, it is especially sensitive to the more economically disadvantaged regions of Canada.

This key instrument, the IRDP, is the government's principle means to deliver direct federal assistance to industry.

Manufacturers, processors, certain tourism operators in all of Canada are eligible. Four tiers of assistance are offered on a progressively increasing basis with the greatest support available in the most economically disadvantaged areas of the country.

IRDP has a streamlined delivery mechanism and has decentralized decision-making in the case of smaller projects. This will increase the availability and usefulness of the program for small and medium-sized businesses. The elements of the program can be applied to reflect local opportunities in each region.

Intended to support private sector initiatives, IRDP is aimed at projects, industries and technologies with the greatest potential for economic return, sustained growth and international competitveness.

IRDP responds particularly to the needs of small and medium-sized businesses and complements other federal programs and the Federal Business Development Bank. IRDP features of particular interest to such firms include:

- a simpler, more flexible program structure;
- regionalized decision-making and program delivery for many projects;
- eligibility for assistance by unincorporated entities;
- broader support for consultant's studies and venture capital searches;
- access, for small businesses, to innovation assistance for projects involving new products but not substantial risk;
- support for marketing initiatives; and
- for certain non-profit organizations, assistance to support manufacturing and processing operations, and certain tourism operations.

a) Program Elements

Many worthwhile projects fail because assistance is not available at a specific stage in their growth. IRDP addresses this problem by providing a range of financial support including grants, contributions, repayable contributions, participation loans and loan guarantees over all the phases of a typical corporate production cycle. The elements of the program are:

- industrial development climate;
- innovation;
- modernization/expansion;
- marketing; and
- restructuring.

Since the assistance required depends on the nature of the project and the need for support, the program flexibility will enable this assistance to be tailored to the particular circumstances of the applicant.

b) Regional Designation

While the program is a national one, and support is available for all areas, not all areas of Canada enjoy the same economic prosperity. Accordingly, to further encourage and stimulate industrial activity in the more economically disadvantaged areas and to reduce the disparity between regions, enriched support is available to those more disadvantaged regions. Targeting support is achieved through the use of a "development index", based on a formula using Canadian government statistical data.

There are four tiers of assistance with Tier I representing a basic national level support. Tiers II, III and IV provide progressively more assistance. The designation of Yukon and the Northwest Territories under Tier III forms part of the basic legislation on the IRDP and as a result the designation of the Territories will not be subject to annual review.

2) Program for Export Market Development (PEMD)

The Program for Export Market Development (PEMD) helps incorporated Canadian businesses to develop, increase and sustain their activities by sharing with them the costs of specific export marketing efforts. PEMD is geared to:

- encourage businesses that have not exported previously to begin export marketing; and

- encourage established exporters to expand their activities in new markets.

PEMD provides up to 50 percent of the costs incurred by a company in its penetration of new markets. These contributions are repayable if sales are made to that market.

The Program for Export Market Development has various sections, each designed to meet a specific circumstance which may result while developing or expanding new or existing export markets.

3) Other Programs

The Department also provides assistance in the North under regional specific programs such as the Special Agricultural Rural Development Agreements (Special ARDA), the Yukon Tourism and Small Business Incentives Program, as well as under the instrument of the Economic Development Agreements through Subsidiary Agreements. Information on these Agreements is available through the DRIE Whitehorse or Yellowknife offices.

Northwest Territories

Review 1983-84

A continuing high level of activity was evident under the Special Rural Development Agreement (Special ARDA), signed in 1977 and extended until March 31, 1984. This affirmative action program is directed to native peoples of the NWT and provides financial and other assistance for the development of business and employment opportunities and the improvement of socio-economic circumstances.

The 595 applications for funding received since program inception in 1977 to February 1984 resulted in 362 accepted offers involving a commitment of approximately $15.3 million, with 10,745 people assisted and 435 direct jobs created.

The Canada/NWT Economic Development Agreement (EDA) (successor to the General Development Agreement) became operational with the establishment of an EDA Secretariat to process applications under the Domestic Market Development and Natural Resource Development Subsidiary Agreements. Under the Domestic Market Development Subsidiary Agreement, five applications for a total amount of $112,085 were approved under the Business Assistance Program, three applications for a total amount of $253,695 were approved under Tourism Development and three applications for a total amount of $146,800 under Community Based Economic Development, bringing the total funding approved to $512,580. Awareness of the EDA continues to increase, as evidenced by the number of applications coming to the EDA Secretariat.

The EDA Domestic Market Development Subsidiary Agreement Programs are available subject to eligibility requirements, to all residents of the NWT.

The Regional Development Incentives Program (RDIA) was phased out December 1983, however, activity up to that time resulted in seventeen applications of which six were accepted for a commitment of $302,000 with authorized capital costs totalling $1,056,000 and the creation of fifty-four direct jobs.

With the amalgamation of the Department of Industry, Trade and Commerce and Department of Regional Economic Expansion into the Department of Regional Industrial Expansion, IT&C programs that were formerly provided from Edmonton are now available to NWT residents from Yellowknife.

The major DRIE national program, the Industrial and Regional Development Program (IRDP), has been available to residents of the Northwest Territories since June 1983. To date four applications have been received and two have been approved under this program for a total of $72,375 with an expected 6 jobs created and direct investment generated totalling $217,000.

The Program for Export Marketing Development (PEMD) is also available to NWT residents and is jointly offered through DRIE and External Affairs.

Plans for 1984-85

To satisfy the departmental objectives of increasing overall industrial, commercial and tourism activity in all parts of Canada and in the process reduce economic disparity, the NWT regional office will direct its future efforts in the following priority development areas:

a) Commercial Development
   i) Native entrepreneurial development; and
   ii) other small business
b) Tourism Development
c) Major Project Benefits
d) Export Market Development/Import Replacement
e) Industrial Development

Yukon

Review 1983-84

The focus of activities by the Department of Regional Industrial Expansion (DRIE) was to increase overall industrial, commercial and tourism activity in Yukon. About $2.6 million was invested by DRIE under a variety of programs to increase economic and employment opportunities.

The Canada, Yukon Tourism and Small Business Incentives program (YTSBIP) was initiated in May 1983 as a federal mechanism for the planning, development and promotion of tourism accommodations, services and attractions to strengthen Yukon's competitive position as an international tourist destination. The program also allowed for a continuation of the programming which had been started under the Canada Yukon Interim Tourism Development Subsidiary Agreement (CYTA) which expired on March 31, 1983. The program provided $2.2 million over one year to stimulate investment in the tourist industry. As of March 1, 1984, DRIE has contributed approximately $2 million to a total of 42 projects.

Demand continued for assistance to native businesses from the Special ARDA program. The program is very highly regarded by native people at the community level who feels involved in the operation of the program through the Special ARDA advisory committee.

Special ARDA is a joint federal/territorial program which provides financial support and technical assistance to projects which will open up new and better economic opportunities, create jobs and improve incomes for people of Native ancestry throughout Yukon. The two-year extension of Special ADA (1982-84) expires on March 31, 1984.

In 1983-84, DRIE's contribution to this program totalled $1.46 million for 40 commercial, primary producing and social adjustment projects. Since the program was initiated in 1978, DRIE has committed approximately $4.8 million to 133 Special ARDA projects.

Since June 1983, assistance to stimulate industrial and regional economic development has been available under the new Industrial and Regional Development Program (IRDP) with the territory being designated as a Tier III region. Since the program began, one Yukon business has accepted an offer of financial assistance in the form of a contribution from IRDP. DRIE will contribute $47,119 representing 37.5 percent of total capital costs estimated at $125,650 to establish a new bakery in Whitehorse.

The Regional Development Incentives Act (RDIA) which was available in Yukon from 1978 to December 1983 provided financial support in 1983 amounting to a total of $57,435 to establish a log cabin manufacturing business in Yukon. Under the RDIA, DRIE offered non-repayable grants to qualifying enterprises to establish, expand or modernize manufacturing or processing facilities. Since the program was initiated, grants totalling $1.98 million have been accepted for seven projects in Yukon. The projects were expected to create approximately 75 new jobs.

The Program for Export Market Development (PEMD) is funded by the Department of External Affairs and delivered by both the Department of External Affairs and Regional Industrial Expansion. DRIE regional offices are processing all applications concerning market identification trips, participation in trade fairs abroad and incoming visits for foreign buyers. PEMD helps Canadian businesses to begin export marketing or to expand their activities in new markets by offering incentives which are repayable from export sales. In 1983-84, one repayable contribution totalling $2,479 has been made to help a small Whitehorse company explore new markets in Alaska.

Plans for 1984-85

The first priority will continue to be programs aimed at reviving the Yukon economy by increasing overall industrial, commercial and tourism activity in Yukon. DRIE's efforts will be directed to the following priority development areas: tourism, commercial development, including native business development and other small business enterprises; major regional projects; export market development and import replacement, and industrial development.

Program activities in the Yukon will depend in part on the proposed Economic Development Agreement now being negotiated. DRIE anticipates the Agreement will be finalized before the end of 1984.

A new Tourism and Small Business Development initiative as a successor to the CYTA and YTSBIP is now being planned by DRIE under the proposed Economic Development Agreement in order to permit continued programming in these important sectors of the Yukon economy.

The extension of Special ARDA beyond its March 31, 1984 expiry date is presently under review.

Increased activities under IRDP and PEMD are also expected.

Revenue Canada

Customs & Excise

Economic Function: General Government Services

Responsibilities

Customs controls the international movement of goods, persons and conveyances and collects duties and taxes on imports.

Excise administers the provisions of the Excise Tax Act, the Excise Act, the Importation of Intoxicating Liquors Act and related regulations. The branch issues licences, provides tax information and audits the records of businesses subject to payment of federal sales and excise taxes.

Review 1983-84

Yukon

As the Yukon Territory is serviced by all modes of transportation, the import and export of goods and the international movement of travellers is readily achieved. For example, a fairly significant requirement for Customs clearance of vehicular and passenger traffic originating from Alaska exists.

The co-ordination and control of Customs activities in the Yukon rests with the Manager, B.C. and Yukon Operations, Pacific Region. The operational structure comprises the area port of Whitehorse, highway Customs ports of entry at Beaver Creek and Pleasant Camp, and three seasonal offices at Little Gold, Fraser and Dawson City. Customs services are also provided by the R.C.M.P. at Old Crow.

At Whitehorse, Customs clearance is provided for goods and passengers arriving by highway, air and rail. Service is provided at four sufferance warehouse operations. Postal parcels arriving from abroad are also processed at this location.

Excise carries out its responsibilities in the Yukon by means of periodic visits by Excise auditors to the 34 businesses licensed under the Excise Tax Act. Excise auditors conduct audits, provide tax information and, as required, assist in the processing of refund claims.

Northwest Territories

Customs personnel in the Northwest Territories are stationed at Frobisher Bay on Baffin Island and at Inuvik. Customs coverage has also been extended to include forty-four other locations where representatives of other government departments are empowered to act on behalf of Canada Customs. The Customs functions performed at these sites vary significantly from one locale to another.

Frobisher Bay is staffed by one full-time Customs Inspector reporting to the Ottawa Region. This Inspector's responsibilities in 1983-84 ranged from the clearance of commercial air freight, aircraft and passengers to the processing of dutiable postal parcels and the control of a sufferance warehouse facility. The Customs operation at this site has been highly successful in terms of expediting the clearance of goods and people.

Inuvik is staffed by one full-time Customs Inspector reporting to the Alberta Region, whose primary duties involved the acceptance of reports inwards and outwards of small aircraft and the clearance of passengers and their possessions. Most of this traffic consisted of charter flights originating in Alaska.

Although the R.C.M.P. provide Customs coverage at 38 locations in the Northwest Territories, they have been called upon to perform administrative functions regularly on behalf of Customs & Excise at only a handful of these sites, outlined below, under the direction of Customs Headquarter's personnel. Customs service in the Northwest Territories is also provided by representatives of other government departments, in their capacity as "Acting Customs and Excise Enforcement Officers", at the sites indicated below:

Royal Canadian Mounted Police

Tuktoyaktuk
Nanisivik
Resolute Bay

Department of National Defence

Cape Dyer
Cape Parry
Hall Beach

Department of Environment

Eureka
Mould Bay

Department of Transport - Canadian Coast Guard
Little Cornwallis Island

The international movement of goods, people and conveyances in the North increased in 1983-84 and, in view of the current high level of economic and political interest in the region, this trend can be expected to continue for the foreseeable future. The emphasis remained on offshore oil and gas exploration and, throughout the year, the "Legislation Implementation Group" project team continued its examination of all Customs functions pertaining to the handling of offshore drilling equipment.

A Notice of Ways and Means Motion (now Bill C-16 - Customs and Excise Offshore Application Act) was introduced in the House on June 29, 1983 and has the effect of extending Customs and Excise jurisdiction to the outer edge of the continental shelf or 200 nautical miles, whichever is the greater.

Effective June 30, 1983, designated goods such as drill ships, artificial islands, service vessels, apparatus and consumables of all sorts, became subject to the laws and regulations relating to Customs and Excise, including the Customs Act, Customs Tariff, Excise Tax Act, Excise Act and the Anti-Dumping Act.

Certain exemptions are provided in this proposed legislation for oil and gas industry operators who had vessels and equipment on site or on order on the effective date. The coastal shipping industry is also addressed in the Act with provisions to safeguard the interests of operators with vessels on site which were engaged in the coasting trade of Canada or were on order when the proposed Act came into force.

Despite increased business activity, the headquarters of most business firms operating in the Northwest Territories who are Excise licensees are located outside the territories. There are, however, 20 Excise licensees in the Northwest Territories. Excise officers make visits to such communities as Yellowknife and Fort Smith to conduct audits, process refund claims and provide tax information.

Plans for 1984-85

Yellowknife is the only territorial/provincial capital in Canada without Customs service. Customs will be placing officers in Yellowknife this year to accommodate the Arctic Winter Games. A Customs office may be established in Yellowknife.

The introduction in 1983 of new legislation extending Customs and Excise jurisdiction to the continental shelf or 200 miles, whichever is the greater, has necessitated a greater presence in the North. Accordingly, Customs intends to position a Customs Officer in Tuktoyaktuk during the summer season.

Royal Canadian Mounted Police

Economic Function: General Government Services

"G" Division

Northwest Territories

Responsibilities

The Royal Canadian Mounted Police, "G" Division, provides policing services in the Northwest Territories under contract to the territorial government. These services emcompass both federal and territorial police responsibilities with headquarters in Yellowknife.

Review 1983-84

The overall crime rate rose during this period by 10%. All criminal code categories of offense increased, the largest being a 20% increase in crimes against persons. Crimes against property were up by 5%, and the remainder of offences against the criminal code rose by 11%. Most of the serious crimes occurring in the Northwest Territories continue to be related to alcohol abuse, and increased participation in alcohol and drug abuse programs is a current priority.

"Nanook", the RCMP safety bear, proved to be an outstanding medium of communication/education with the youth in the north. Messages of crime prevention, safety, and lifestyles, were effectively transmitted to young people.

Efforts continued in 1983-84 to recruit native people. A large number of persons were processed and three special constables were engaged for placement in the Baffin Island region. One, a woman, is the first female to so serve in the Northwest Territories. While there are currently few vacancies in the existing special constable establishment, recruiting efforts are continuing with the objective being to establish a waiting list. Thus, ready resources will be available when vacancies occur or establishment increases are obtained. Fifteen positions for native people constables exist throughout the division.

$750,000 was spent on new construction during the past year to provide new facilities for personnel and to replace old buildings. In addition, $160,000, was spent in a continuing program of energy efficiency upgrading on several units.

"Nanook", The R.C.M.P. "Safety Bear"

Insp. R.T. BYAM congratulates Special Constable Mary HUNT upon being engaged into the Force. Constable Hunt is the first female Inuit Special Constable.

"M" Division

Yukon

Responsibilities

The Royal Canadian Mounted Police "M" Division provide all policing services to the Yukon Territory. Under contract to the Territorial Government, the RCMP enforce the provisions of the Criminal Code and the Territorial Acts. Through contract and non-contract personnel, the RCMP is also responsible for the enforcement of various Federal Statutes and Regulations.

With its Divisional Headquarters in Whitehorse, present strength is 119 Regular Members (including 20 Special Constables), 7 Civilian Members and 17 Public Service Employees. Detachments are located at Old Crow, Dawson City, Mayo, Beaver Creek, Carmacks, Whitehorse, Carcross, Teslin, Watson Lake, Faro, Ross River and Haines Junction. One Sub-Detachment is located at Pelly Crossing.

Review of 1983-84

The number of non-traffic Criminal Code Offences decreased 16 percent over the previous year, while Federal Offences decreased 19 percent.

Criminal Code traffic offences increased by 11 percent, and Territorial traffic offences also increased by 11 percent. The total number of reportable traffic accidents decreased by 216, from 1,220 in 1982 to 1,004 in 1983. There were 11 traffic fatalities in 1983; 8 in 1982.

The Native Policing Program for the Yukon Territory was increased from nine to thirteen positions. During the year, five Native Special Constables (3 female, 2 male) were taken on strength, while two (1 female, 1 male) resigned. As of March 31, there were 11 Native Special Constables on strength.

During the year, a new office building, with cells, was constructed for Pelly Crossing Sub-Detachment, and an existing house in Carmacks was purchased to provide living quarters.

Plans for 1984-85

A new Detachment building will be constructed at Mayo, with completion scheduled for February, 1985. Additional living quarters will be purchased at Watson Lake (2 units), Haines Junction (1 unit) and Dawson City (1 unit).

It is expected that two new Native Special Constables will be hired to fill existing vacancies.

Plans 1984-85

New construction in the coming year will be limited to new detachments at Pond Inlet and Igloolik, married quarters at Pond Inlet, and the secure bay for the Frobisher Bay detachment.

Energy retrofits and/or storage modules are planned for married quarters at Fort Rae, Cambridge Bay, Spence Bay, Rankin Inlet, Eskimo Point, and Pangnirtung.

Secretary of State of Canada

Official Languages in Education

Economic Function: Education

Responsibilities
The program provides assistance to provinces and territories for the development and maintenance of minority official-language education (English in Quebec, French elsewhere) and second official-language instruction (English in Quebec, French elsewhere).

Review 1983-84
The territorial governments signed three-year bilateral agreements with the Department of the Secretary of State for the official languages program in education commencing in 1983-84. The total allocation for 1983-84 was $370,000.00. In the Northwest Territories, $180,000 was provided for the following:

- fellowships for post-secondary students;
- full-time monitors to assist French language teachers;
- French coordinator;
- text books and other resources materials for teaching French;
- French language assistants;
- French immersion programs;
- in-service training for French second-language teachers;
- bursaries to French second-language teachers.

In the Yukon, $190,000 for French second-language programs was used for:

- French immersion classes in Whitehorse;
- the salary for a full-time coordinator of French courses;
- full-time French-language monitors
- support for the expansion of in-service training program and career development programs for teachers;
- support for post-secondary students to pursue their education at a francophone or bilingual institution.

Payments for Official Languages in Education at the elementary, secondary and post-secondary levels for the province of Quebec are printed in the annual publication "Federal-Provincial Programs and Activities - A Descriptive Inventory".

Plans for 1984-85
The Department will continue to provide assistance towards the official languages programs in the Yukon and Northwest Territories in accordance with the bilateral agreements.

Citizenship Program

Economic Function: Culture & Recreation

Responsibilities
The prime objective of the Department of the Secretary of State is to create a sense of belonging among Canadian citizens. Non-financial support is an important element in the Department's strategy. Such assistance comes in the form of face to face contact with departmental social development officers and the consequent transfer of organizational, problem solving, and evaluation skills to individuals who make up voluntary organizations.

The Department's offices in the Yukon and Northwest Territories receive requests from voluntary associations for technical advice, assistance and grants in support of various community activities. For example, the Department encourages the participation of ethnocultural groups in the mainstream of Canadian society while preserving their cultural heritage, and also the preservation of official language minority groups' rights and cultural identity within their communities. The Department also encourages the participation of Native people in Canadian society and the development of special projects that respond to special needs as identified by Native people.

Review 1983-84
Program services for the Northwest Territories were administered through an office in Yellowknife, reporting to the Alberta Regional Office. Through the Native Citizens' Program, technical and financial support was provided to Native representative organizations, Native women's groups, friendship centres and communications societies. In addition social and cultural development projects and film and slide productions were provided for remote communities. The Multiculturalism Program supported projects that included writing and publications, language teaching aids for Inuit and Indian groups, Canadian Ethnic Studies in Native affairs and Inuit music, and performing and visual art productions. The Canada's Birthday Program supported projects to help Canadians celebrate our national day.

The Quebec Regional Office provided assistance for the production of community television and radio programming for Inuit in northern Quebec. The Avataq Inuit Society received funding through the Native Social and Cultural Development Program for various cultural activities during the year. Funding was also provided to the Inuit Language Commission through the Native Language Retention Program in cooperation with other levels of federal and provincial financing.

Program services for the Yukon Territory were administered through an office in Whitehorse, reporting to the Pacific Regional Office in Vancouver. During the year the office was active with ethnocultural, francophone and women's groups as well as other community associations. Regional staff responsible for Official Language Community Groups have continued to assist the developing Franco-Yukon citizens group seeking to strengthen the Yukon chapter of Canadian Parents for French. Major activity continues through the Native Friendship Centre, Native Women, Native Social and Cultural Development and Native Communications Programs. Further information on services related to Canadian citizenship can be obtained by contacting either the Whitehorse or Yellowknife offices.

Plans for 1984-85
In the coming year, the following initiatives will be taken in the Northwest Territories:

- Implementation of the Federal Government policy regarding bilingual service in the north;
- Increased support to Native organizations. An additional Native Friendship Centre in Rankin Inlet has been approved for funding beginning April 1, 1984;
- One additional Race Relations officer will be hired for the Yellowknife office;
- Increased funding in support of Native based remote satellite broadcasting.

The Quebec Regional Office will continue to work closely with Native groups in the areas of Social and Cultural Development, Communications and Language Retention.

The Department will continue to offer financial and technical/ professional services in the Yukon Territory to various community associations that are pursuing objectives consistent with Departmental objectives and priorities. The Department will continue to encourage youth exchanges through its Open House Canada Program. It is expected that Official Language Community Groups staff in the Pacific and Alberta Regional Offices will provide increasing technical support in the Yukon and Northwest Territories during the coming year.

Human Rights Directorate

Economic Function: General Government Services

Responsibilities
The Human Rights Directorate operates a secretariat for the Continuing Federal-Provincial-Territorial Committee of Officials Responsible for Human Rights which provides a mechanism for liaison and consultation in matters relating to Canada's international human rights commitments. The Yukon and Northwest Territories regularly send official representatives to the twice yearly meetings of the Committee.

Review 1983-84
The Secretary of State serves as Chairman of the Federal-Provincial-Territorial Ministerial Conference on Human Rights. Representatives from both the Yukon and Northwest Territories were in attendance at the last conference held in September 1983.

Plans for 1984-85
The Human Rights Directorate operates the secretariat for the Ministerial Conferences. The next Federal-Provincial-Territorial Conference is being planned for early 1985. The areas of concern and interest to Ministers currently being studied by the Committee of Officials include affirmative action and related special support programs; the development of a plan of action for Canada's participation in the United Nations Decade of Disabled Persons; measures to combat racism; the Teaching of Human Rights; and the development of a common interpretation for the Convention on the Elimination of All Forms of Discrimination Against Women, and the International Convention on the Elimination of All Forms of Racial Discrimination.

Supply and Services Canada

Economic Function:[1]

Supply Administration

Responsibilities:
Supply Administration is responsible for purchasing, printing and publishing, advertising management, expositions, traffic management, industrial security, equipment maintenance and repair, warehousing, and distribution of surplus government materials. In 1983-84 the total volume of business transacted by the Administration on behalf of the Government of Canada was in excess of $6 billion.

The SA also provides limited support to the Yukon and Northwest Territories Governments by providing access to the Stocked Item System and the Maintenance and Repair Service for office machines.

A purchasing office, established in Whitehorse in April 1980, provides acquisition services for Federal departments and agencies programs conducted in the Yukon.

Supply Administration placed over $13M in contracts with suppliers located in the Yukon and Northwest Territories. This was closely matched by the actual tax dollars spent for goods and services destined for delivery in the North. For eleven months of the last fiscal year, these purchases amounted to over $14M.

The department maintains source lists of qualified suppliers from which it solicits bids for its contract requirements. With increased regionalization slated for the new fiscal year, it is anticipated that greater opportunities will exist for local suppliers to compete for more of the tax dollars spent in the North. Last year, some 450 northern suppliers obtained contracts placed through Supply Administration.

Purchases of individual commodities in the $1M category fell into the following groupings:

Food, beverage and tabacco
Fuel Oils
Lumber
Motor Vehicles, Trucks and cycles
Charters- aircrafts and ships
Scientific and research services

Review 1983-84
Some highlights of our contracting activity in the North follow:

- For Energy Mines and Resources contracts were awarded in connection with two significant projects: air charters to support the Polar Continental Shelf Project, and drilling and logistics support for a Geological Survey of Canada scientific project in the Southern Beaufort Sea.

- For Environment Canada, contracts were awarded in connection with the Baffin Island Oil Spill Program to update initial work done in a 1979/80 controlled oil spill program to determine the effects of the Baffin Island Macrobenthos and the potential shoreline countermeasures.

- For Transport Canada, contracts included projects for updating Arctic Shipping Pollution Regulations and Arctic Marine Transportation - Marine R & D Energy.

- For the Canadian Coastguard, a contract was awarded for a 5-year period for chartered air services in connection with ice reconnaissance activities in the High Arctic.

- For the Department of Fisheries and Oceans, a contract was awarded to Steltner Development and Manufacturing Co., Pond Inlet, N.W.T. for data acquisition at Eclipse Sound and Adams Island to study large scale deformation of sea-ice surface and variations.

- For Health and Welfare, a contract was awarded in connection with the Outpost Nursing Program.

- For the department of Indian and Northern Affairs, contracts were awarded for the Arctic Land Use Research Program and for fire bombing services for the N.W.T.

[1] Supply and Services Canada is *not* reported in Annual Northern Expenditure Plan.

Transport Canada

Canadian Air Transportation Administration

Economic Function: Transportation

The Canadian Air Transportation Administration (CATA) is responsible for the development of a safe and efficient national civil air transportation system that contributes to meeting government objectives. CATA also operates specific elements of this system. The Administration's northern activities include providing airports, air traffic control facilities and services, and navigational aids for domestic and international air routes. The Administration also carries out strategic and master planning for northern air transportation, and budgets for and implements approved projects.

Thus, the Ottawa headquarters gives national direction to the civil air transportation system and develops policies, standards and regulations. Six regional offices are engaged in the day-to-day operation of the system. Three of these officers - Québec, Central and Western are responsible for CATA's northern activities.

Air Cushion Icebreaking Bow during tests in Thunder Bay

Arctic Air Facilities Policy

The Policy for the Provision of Air Transportation Facilities and Services in the Yukon and Northern Territories, generally referred to as the Arctic Air Facilities Policy, was approved in 1974. The policy, which formally expired on March 31, 1983, provided funding for construction and operation of airports, air navigational aids in the Yukon and Northwest Territories, and also for training of locally hired airport maintenance staff and weather observer/communicators. Under the policy, airports were classified Arctic A, B, or C, as defined by a number of characteristics, with minimum standards established for the facilities and services to be provided to each class of airport. Arctic A airports are major airports which serve larger communities and have scheduled jet aircraft operations. These airports are owned and operated by Transport Canada either directly or under contract. Arctic B and C airports primarily serve the needs of smaller communities and are not generally operated by Transport Canada.

Of the 62 Arctic airports listed in 1974, 11 were classified as Arctic A and the rest as Arctic B or C. In recent years, expenditures at Arctic A airports have, for the most part, been to restore or replace facilities and equipment. Total capital expenditures to the end of 1982-83 were approximately $30 million, compared with the financial ceiling approved in 1977 of $56 million. The current approved capital expenditure level for completing the B and C airports program was $81 million. Approximately $60 million had been spent at some 40 sites as of March 31, 1983.

A review of the Arctic Facilities Policy was carried out by Transport Canada. After being reviewed by the territorial governments, federal departments and the aviation industry, a report, released in 1982, suggests that the CATA national airports classification system be extended to the Arctic to replace the current unique classification system; that new airport facilities by provided only to communities more than three hours surface travel time from an airport with regular commercial air services; and that there be more flexibility in determining runway lengths and other airport facilities.

Three options have been developed for the future:

- Let the Arctic Facilities Policy expire;
- Renew the policy with changes for a further six-year period to cover refurbishment and operation of existing airports only; or
- Renew the policy with changes for a further six-year period to cover the construction of new airports as well as the refurbishment and operation of existing airports.

Cabinet is expected to consider the options in early 1984.

The further construction of any new community airports in the Territories is dependent upon formal approval of a new air facilities policy for the Arctic because the 1974 policy authority has expired.

Air Navigation Services Activity

The Air Navigation Services Activity is responsible for providing air navigation services in Canada. The Air Navigation Services Activity includes designating airways/air routes; the operation and provision of their associated facilities and the development of related standards; inspecting and calibrating navigational aids; inspecting runways and manoeuvering areas; designing, constructing, installing, operating and maintaining telecommunications and electronic facilities; providing an air traffic control system for Canada and in the international airspace for which Canada has accepted responsibility through the International Civil Aviation Organization (ICAO); and funding meteorological services in support of aeronautics.

Air Traffic Services Branch

Air Traffic Services continues to provide control services for flights operating under instrument flight rules (IFR) north of 60°, providing an alerting service for aircraft in difficulty and for all overdue aircraft on flight plans or flight notifications. In this area, control zones with established Transport Canada control towers are located at Whitehorse and Yellowknife. In addition, on April 1, 1984, Air Traffic Services assumed responsibility for the management of 19 flight service stations north of 60° from the Telecommunications and Electronics Branch. These stations provide aeronautical communications and related flight services to the northern aviation community.

For air traffic control purposes, the high-level airspace in northern Canada is divided into two control areas; the Arctic Control area, and the Northern Control area. Control services are provided to all flights operating within these areas, using the Arctic and northern domestic high-level airway and route network. In addition, flights with sophisticated self-contained airborne navigation systems are accommodated on Great Circle and minimum time, direct tracks. This IFR Area Control Service is provided by three area control centres located at Edmonton, Winnipeg and Montreal.

To provide for these activities, Air Traffic Services operates an extensive dedicated voice telephone network to locations in the North, along with lateral voice communication between Edmonton, Montreal, Moncton, Frobisher, Chimo, Resolute Bay, Gander and Reykjavik.

In addition, to assist in the movement and control of IFR traffic, the Edmonton Area Control Centre has direct controller to pilot communications through peripheral (PAL) remote transmitting and receiving at Hay River, Inuvik, Norman Wells, Whitehorse and Yellowknife. The Winnipeg Area Control Centre also has a PAL located at Churchill. The flight service stations also have a remote communications outlet capability at Wrigley, Fort Good Hope and Liard River.

In the northern low level airspace, control service is provided to IFR flights operating along designated airways, within selected IFR airports and within control zones without control towers designated around a number of airports for additional protection and improved service. At a number of uncontrolled airports in the north, aerodrome traffic zones are designated to increase the VFR weather limits in an eight kilometre radius to provide protection to IFR aircraft operating into these airports.

Facility Engineering and Systems Development Branch

During the report period, work has continued to implement and enhance air navigation facilities in the north with the addition of two Doppler very high frequency omni-direction ranges with distance measuring equipment (DVOR/DME); the replacement of three non-directional beacons (NDB) in 1983-84 with four more planned for 1984-85; and the installation of a very high frequency direction finding (VHF/DF) facility at Inuvik. The ongoing program to replace and upgrade old power generating units for air navigation facilities results in improved service reliability.

Aviation Regulation Directorate

Aviation activity in the North, as elsewhere in Canada, is regulated by three branches of the Aviation Regulation Directorate:

1) Airworthiness;
2) Licensing Certification; and
3) Enforcement and Legislation.

The Airworthiness Branch is responsible for developing aeronautics legislation; standards and procedures in respect of aircraft maintenance, manufacturing and repair; and inspecting, examining and certifying commercial operators and aircraft.

The Licensing Certification Branch is responsible for developing aeronautics legislation, standards and procedures in respect of aviation personnel, commercial operators and aircraft; and inspecting, examining, licensing and certifying aviation personnel, commercial operators and aircraft. As of December 31, 1983, 417 valid licences and permits were held by persons residing in the Yukon Territory and 630 by persons residing in the Northwest Territories. The departmental Gulfstream II (G-GCFB) aircraft continued to serve on flight inspections of electronic and visual en route and landing/approach aids through the Arctic.

The Enforcement and Legislation Branch is responsible for promulgating legislation, standards and procedures; surveillance, detecting and investigating regulatory infractions; and taking administrative and judicial enforcement action against offenders.

Aviation Safety Bureau

The Aviation Safety Bureau continued to provide passenger safety briefings to federal department staffs who are periodically or permanently working in the North. Increased attention has been given to charter aircraft contracts, passenger safety around fixed-wing aircraft and helicopters, customer/pilot relationships, and survival training.

Aviation safety literature and posters are regularly distributed to northern flight service stations and AES weather offices by Transport Canada regional aviation safety officers (RASO). RASOs conduct safety seminars for associations groups, air carrier staffs and their clients. More emphasis is being placed on consumer education, resulting in better understanding of flight safety considerations and decisions. As a result of this awareness, pilots have reported a significant decrease in client pressure to fly in unsafe conditions.

Greater emphasis has been placed on safety programs related to commercial aviation, particularly among small and medium size carriers, employed under contract or charter in northern operations. More than 350 company pilots have been trained as company aviation safety officers (CASO) to implement in-house safety programs. Additionally, by invitation from a company, the RASOs will conduct a confidential voluntary safety survey to assist in developing or improving its overall safety system. This new system has been enthusiastically received by the aviation community.

The bureau encourages the reporting of non-accident occurrences to identify deficiencies before accidents occur. More bureau resources have been allocated to investigation of incidents, hazards and safety advisory services. This approach is compatible with and enhanced by the voluntary reporting of potential and actual safety problems by charter clients and air carrier participants in the Company Aviation Safety Management Program. As a result, the safety interests of governments, aviation companies and their customers are being clearly defined and coordinated.

Airports and Construction Services

The Airports and Construction Services Directorate is responsible for the provision, maintenance and operation of the national airports system, and for the planning, design, construction and maintenance of all airport facilities, with the exception of air traffic control and related equipment.

In managing the airports activity, the Directorate establishes national objectives, plans, priorities, policies and standards for marketing; provides and operates airport facilities and services; performs policing and security functions at airports; and provides advisory assistance to community airports as well as engineering and architectural support to CATA installations, both on and off airports, and to other sections of Transport Canada, other federal agencies and territorial government organizations.

Québec Region

There is one Arctic A airport (Frobisher Bay) and seven Arctic C airports (Pangnirtung, Broughton Island, Clyde River, Pond Inlet, Cape Dorset, Lake Harbour and Sanikiluak) in the Quebec Region.

A status report follows on projects at Quebec Region Arctic sites, including construction projects, and Air Navigation Services (ANS) restorations, replacements and improvements.

Review of 1983-84

Frobisher Bay:
The emergency power unit (EPU) was replaced at the transmitter site. Some modifications were made to the staff house. Final design work on the new air terminal building and related works is well-advanced. Completion is expected in April, 1984. Consolidation of the high frequency receivers and ultra high frequency transmitter facilities was completed in February, 1984.

Cape Dorset:
The relocation of the non directional beacon (NDB) was completed in January, 1984.

Pond Inlet:
Non directional beacon (NDB) equipment was delivered and installed and became operational in January, 1984.

Plans for 1984-85

Frobisher Bay:
Awarding of the contract for the construction of a new air terminal building and related works has been advanced to May, 1984. The contractor must purchase materials and assemble a crew for transfer to Frobisher Bay by August, 1984. Two ANS operational support vehicles are planned for replacement and the navigational aids will be consolidated.

Clyde River:
The replacement of a vehicle is planned for 1984/85.

Lake Harbour:
The purchase of an emergency vehicle is planned for 1984/85.

Central Region

One Arctic A airport (Resolute Bay) and 14 Arctic B and C sites are located in the Central Region.

Community airport radio stations (CARS) staffed by observer/communicators are established at Chesterfield Inlet, Eskimo Point, Gjoa Haven, Grise Fiord, Igloolik, Nanisivik, Pelly Bay, Repulse Bay, Spence Bay and Whale Cove.

A status report on projects at Central Region Arctic sites, including construction projects, and air navigational services (ANS) restorations, replacements and improvements follows:

Review of 1983-84

Baker Lake:
The combined air terminal/operations building was completed and is operational. The furnishings were installed and final touch-ups were completed. The provision of new control cabling is approximately 60 per cent completed. One ANS operational support vehicle was replaced.

Chesterfield Inlet:
Final design work for the combined air terminal/operations building was completed by the consultant. A new power cable was installed.

Eskimo Point:
The runway was gravelled. Additional crushed gravel was hauled and stockpiled for a 10-year maintenance program.

Gjoa Haven:
Construction of the passenger shelter building was completed and the medium-intensity lighting was installed to illuminate the runway, taxiway, apron edge, threshold and pre-threshold areas. The runway edge intensity lighting systems (REILS) and visual approach slope indicator system (VASIS), illuminated windsock and rotating beacon were also installed. Installation of meterorological equipment was completed in January, 1984.

Hall Beach:
Widening of runway 12-30 was completed. The runway now meets standard minimum requirements.

Igloolik:
The materials for the installation of the airport lighting were purchased and shipped to Igloolik via the Eastern Arctic sealift.

Rankin Inlet:
The original fuel dispensing facility was destroyed during a DND helicopter accident in August, 1982. Construction work to replace the facility was completed in 1983/84 providing a fixed aviation fuel dispensing and storage facility.

Repulse Bay:
Meteorological instruments were relocated to a new weather instrument area during October, 1983.

Spence Bay:
Additional meteorological instruments were provided in August, 1983.

Whale Cove:
A gravel dock was constructed to off-load the gravel crusher and a haul-road was constructed to the site. A storage garage for the equipment was completed. Feed material was stockpiled in preparation for crushing.

Plans for 1984-85
Baker Lake:
Installation of a transformer in the air terminal operations building will be carried out this year.

Chesterfield Inlet:
A contract will be awarded in May, 1984 for the combined air terminal/operations building. Construction is to be completed in 1984/85.

Coral Harbour:
Preparations are under way for the regravelling of runway 15-33.

Replacement of the heating fuel distribution system and the heating fuel tank farm dyking projects has been deferred to future years.

Hall Beach:
Work on runway 12-30 will be carried over from 1983/84.

Igloolik:
A construction contract will be awarded in May, 1984 and will involve complete installation of a runway lighting package including medium intensity runway, taxiway, apron, edge threshold and pre-threshold lighting, as well as a runway edge intensity lighting system (REILS:) illuminated wind cone; rotating beacon; and field electrical centre.

Rankin Inlet:
One ANS operational vehicle is anticipated for replacement during 1984/85.

Resolute Bay:
An ANS operational vehicle is planned for replacement in 1984/85.

Whale Cove:
The runway will be regravelled during the 1984/85 construction season.

Western Region

Nine Arctic A airports (Cambridge Bay, Fort Simpson, Fort Smith, Hay River, Inuvik, Norman Wells, Yellowknife, Watson Lake and Whitehorse) and 30 Arctic B and C airports are located in the Western Region.

Community airport radio stations (CARS) staffed by observer/communicators exist at Farr, Ross River, Teslin and Old Crow in Yukon; and at Aklavik, Fort Resolution, Fort McPherson, Fort Good Hope, Holman, Wrigley and Sachs Harbour in the Northwest Territories.

A status report on projects at Western Region Arctic sites, including construction projects, and air navigation services (ANS) restorations, replacements and improvements follows.

Review of 1983-84
Beaver Creek:
Construction work being completed, the Beaver Creek Airport was officially opened in early November, 1983. The improvements to the airport which were finalized in 1983/84 included the completion of work on the passenger/cargo shelter and installation of the furnishings. Installation of visual aids was completed. The apron and taxiway were graveled and hazard beacons were installed.

Cambridge Bay:
Further improvements to the gravel surface of runway 13-31 were carried out and the sewage tanks were replaced. Final design work was completed for the passenger/cargo shelter facilities for the handicapped.

Fort Liard:
A self-propelled grader was purchased. Airport development continued including installation of visual aids and completion of the passenger/cargo shelter. Groundsite work on the runway, taxiway and apron was completed in July, 1983. Treasury Board approval was received in March for additional funds for the passenger/cargo shelter.

Fort Norman:
Construction work on the passenger/cargo shelter was completed. A non directional beacon (NDB) and meteorological equipment were installed and a safety fence was erected.

Fort Simpson:
Facilities for the handicapped were installed and completed.

Fort Smith:
The absestos insulation was removed from the maintenance garage and the building was reinsulated. The overhead garage doors were replaced and the building exterior was painted. Facilities for the handicapped were installed in the air terminal building and the runway lights were recabled. Work continued on the installation of a DVOR/DME (Doppler very high frequency omni directional range distance measuring equipment) and is now approximately 60 per cent completed.

Holman Island:
Replacement of the building for the non-directional beacon was completed. The NDB was relocated to this new facility during March, 1984.

Inuvik:
Consultants were engaged and final design work on the air terminal building is expected to be completed in April, 1984. The design work on the piles was completed and the airside/groundside design work was also completed. The energy conservation retrofit is under way. Design work is under way for the firehall and sand storage building. Some repair work was also done on the air terminal building roof. The VHF/DF (very high frequency direction finding equipment) was supplied and installed in November, 1983. Upgrading of facility equipment was completed in December, 1983. An automatic terminal information system (ATIS) was supplied and installed during November, 1983.

Tuktoyaktuk:
Gravel was purchased and stockpiled for crushing. Gravel was placed on the runway and taxiway surfaces. A safety fence was erected, and firefighting and training equipment was supplied.

Watson Lake:
A security fence was erected and the design was carried out for the energy retrofit. The existing IPU (interruptable power unit) at the NDB (non directional beacon) site was completed with a new diesel IPU, in September, 1983.

Whitehorse:
Design work on the air terminal building is under way. Commencement of this project was successfully advanced to 1983/84. Contracts for both airside and groundside development were awarded. Work on the aircraft apron was completed with completion of the roads and carpark expected in May, 1984. Final design for the asbestos abatement control program for the maintenance garage was advanced to 1983/84 to allow for an early construction start in 1984/85. The foundation piles for the terminal building were installed. A power line for the VOR/DME (very high frequency omni range distance measuring equipment) was replaced in February, 1984.

Wrigley:
Gravel was placed on the surfaces of the runway, taxiway and apron. The upgrading of the lighting system, including the low intensity runway lighting (LIRL) and the runway identification lights (RIL), is under way. DVOR (doppler very high frequency omni range) equipment was installed and commissioned during February, 1984.

Yellowknife:
Work was completed on the overlay of runway 15-33, taxiway A and aprons 1 and 2. Facilities for the handicapped were completed and the access road to the air terminal building was paved.

Plans for 1984-85

Burwash:
A program to provide vehicle advisory services is planned.

Fort Liard:
Consultants will be hired to design the log passenger/cargo shelter, with possible award of contract in 1984/84.

Fort Reliance:
A VHF (very high frequency) installation is planned for the Atmospheric Environment Service (AES).

Fort Smith:
Acquisition of a non directional beacon (NDB) is planned.

Hay River:
The existing transmitter site will be replaced. Acquisition of an NDB (non directional beacon) is planned.

Inuvik:
It is proposed to expand the existing air terminal building, renovate the existing terminal area, provide a paved parking lot, and expand the existing apron. Design work for the piles was completed with contract award and construction start planned for April, 1984. Completion of the final design work on the air terminal building is planned for April with contract award and construction work to follow in June. The airside/groundside contract will be awarded in April with construction planned for June. The final consultant design work for a new power house distribution load centre and interruptable power unit (IPU) will be completed. The ILS (instrument landing system) for runway 05 will be upgraded.

Norman Wells:
The existing FSS (flight service station) facility will be renovated.

Watson Lake:
Design work for a new power house distribution load centre and interruptable power unit (IPU) for the transmitter and receiver sites will be completed in 1984/85. Energy conservation work will be carried out on all buildings. An NDB (non directional beacon) will be installed.

Whitehorse:
A contract will be awarded for the air terminal building and related works program in May, 1984. Construction will follow in 1984/85. The final design work for the asbestos abatement project in the maintenance garage has been scheduled for June, 1984, and a contract will be awarded in July. Two NDBs (non directional beacons) will be acquired.

Yellowknife:
Consultants will be engaged to complete final design of the air terminal building expansion. This design work will encompass the air terminal building; apron facilities; correction of major deficiencies in the layout and capacity of the groundside systems; upgrading of water and sewage system; and the expansion of operational areas for Transport Canada within the terminal building. A warning strobe beacon will be located on the NDB (non directional beacon) as a safety measure. The ILS (instrument landing system) for runway 33 will be upgraded.

Canadian Marime Transportation Administration

Economic Function: Transportation

Responsibilities

The Canadian Marine Transportation Administration (CMTA) ensures the efficient and safe development and operation of the national marine transportation system. It coordinates the administration and management of federal marine way and terminal activities throughout the Canadian Coast Guard, the Canada Ports Corporation, the Ports and Harbours Directorate, the St. Lawrence Seaway Authority and the Atlantic, Laurentian Great Lakes and Pacific Pilotage Authorities, and nine Harbour Commissions. In the Arctic, the administration provides facilities and services for commercial and resupply shipping.

Canada Ports Corporation

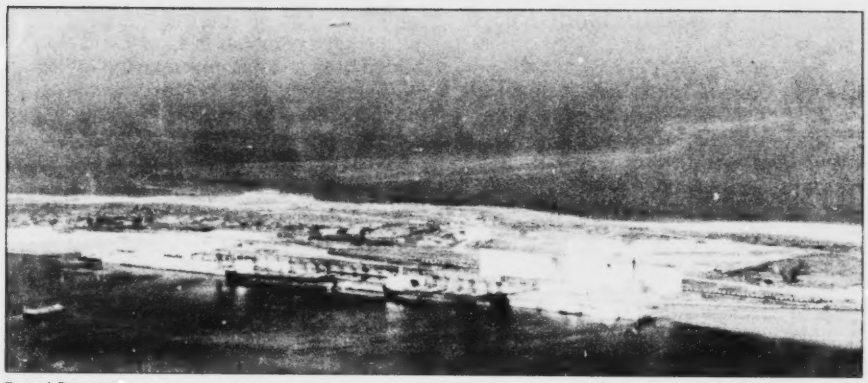
The Canada Ports Corporation (CPC) leases facilities in Churchill to the Northern Transportation Company Limited (NTCL) for its barge resupply operations to communities on the west coast of Hudson Bay. In 1983, NTCL shipped 21 000 tonnes of Artic re-supply goods. CPC provided facilities for the loading of grain for commercial shipments overseas.

A total of 23 vessels were loaded; one wheat, 21 barley, and one pellet. The last ship departed on October 20, 1983, (the end of the shipping season).

Harbours and Ports Directorate

CMTA administers certain public port facilities north of 60° particularly along the Mackenzie River system and in small coastal communities from Amundsen Gulf to Ross Strait in the western Arctic. These facilities are in addition to those provided by the private sector. Facilities in the western Arctic particularly along the Mackenzie River system are generally suited to shallow draft barge traffic. There were no major changes to these facilities in 1983 and none are planned for 1984.

Two public harbours are located in the eastern Arctic, Nanisivik in Strathcona Sound on Northwestern Baffin Island, and Frobisher Bay in the southern part of Baffin Island.



Port of Churchil.

Canadian Coast Guard

General Responsibilities in the North

The Canadian Coast Guard (CCG) coordinates the delivery of cargo to northern communities for the Canadian government, the United States Air Force (USAF), and Canadian commercial interests; provides ice and routing information as well as icebreaker escort as well as support and supports environmental research ad surveys. CCG installs, operates and maintains aids to marine navigation, as well as a ship reporting, clearance and information system for vessel traffic (NORDREG) and a network of Coast Guard radio station. It carries out search and rescue operations, and administers the Canada Shipping Act (CSA), the Navigable Waters Protection Act (NWPA) and the Arctic Waters Pollution Prevention Act (AWPPA).

Eastern Arctic Operations 1983

The Canadian Coast Guard coordinated and conducted the annual resupply in the Eastern Arctic, assisting with the delivery by ship of fuel, equipment and other commodities to isolated bases, communities and Dewline sites. It also provided ice-routing and icebreaker escort to commercial shipping, particularly on the Hudson Bay route to Churchill, and to ships calling at Frobisher Bay, Strathcona Sound, Resolute Bay, Little Cornwallis Bay and at sites on the east Baffin Coast and in Foxe Basin.

Eastern Arctic Sealift operations used the services of four commercial dry cargo carriers operating a total of nine (dry cargo vessels and one commercial bulk carrier operating four tankers. Delivery was made to 33 sites, two more than in 1982 and these included civil settlements and Dewline sites in Canada and Greenland. A total of 10 096 tonnes of dry cargo was delivered and 27 363 tonnes of bulk petroleum, oil and lubricants. Eighty six tonnes of cargo were moved between sites and an additional 508 tonnes were shipped south to Quebec, Montreal and Ogdensburg, N.Y. Personnel of the Arctic Sealift section also assumed the role of Port Warden at Nanisivik and Little Cornwallis Island and in addition, performed the role of Customs Officer at Little Cornwallis Island.

Vessel Traffic Services - NORDREG Canada

The Arctic Canada Traffic System better known as NORDREG Canada and the Ice Operations office in Frobisher Bay commenced operations on July 5, 1983. This Coast Guard Traffic Centre is responsible for the monitoring and regulating of marine traffic movements in Arctic waters. This is accomplished through pre-clearance procedures and by providing information to mariners on traffic, navigational dangers, weather, ice information, ice routing and the allocation of icebreaker support as required. During the navigation season, 76 ships including Canadian Coast Guard and research vessels made approximately 100 trips through the Arctic Canada Traffic Zone. the NORDREG Centre was responsible for arranging 11 medical evacuations for both government and commercial ships. The Coast Guard Traffic Centre, Frobisher Bay for the navigation season 1983/84 processed 6 579 messages, handled 991 917 gross tonnes of shipping, sent 289 ice routes, processed 371 clearances and issued 178 notices to shipping. Total moves reported to NORDREG including in, out and lateral moves within the NORDREG Canada Zone totalled 2 108.

Marine Radio Communications

During the 1983 Arctic navigation season, Coast Guard Radio Stations continued their vital role in support of the overall Coast Guard effort to ensure the safe and expeditious movement of shipping in the Canadian Arctic.

The provision of ice, weather and other navigational information by Coast Guard Radio Stations as well as the maintenance of a continuous listening watch for distress and safety communications continued throughout the season. Other efforts in the safety area included providing the necessary communications infrastructure to ensure the effectiveness of the NORDRFG Ship Reporting System.

Throughout the Arctic, ships of the Coast Guard fleet were again extensive users of the radio station system for their operational and administrative traffic. Communications from commercial shipping were most significant in the Resolute, Coral Harbour, Frobisher and Churchill areas.

Concerned with the importance of good communications in support of safety related to oil and gas activity in the Arctic, CCG undertook a comprehensive study of Arctic communications. The recommendations of this study now form the basis of an extensive planning process, which continued through 1983, and will further ensure that future safety communications requirements in the Arctic are adequately met.

In 1983, eight of the 13 periodic radiobeacons in the Hudson Straits were refurbished to provide coverage of approximately 80 nautical miles each. A ninth, marking the entrance to Hudson Strait, was converted to continuous operation with coverage of 180 nautical miles. Three radio beacons on the Labrador coast were decommissioned.

A contract was placed with a consulting firm during 1983 to analyze Omega accuracy and availability in the Beaufort Sea region of the Western Arctic, utilizing shore and shipboard monitor data collected in previous years. A report will be issued in 1984.

Ship Safety Activities

Inspection activity for the Eastern Arctic and Western is handled by Coast Guard regions, in collaboration with Coast Guard headquarters surveyors, who are normally the first to be contacted when vessels sustain ice damage. During the 1983/84 season, ice damage reports were received relating to vessels. Technical advice was provided from Ottawa headquarters with regard to temporary repairs and safety precautions to be taken.

The headquarters sections of Coast Guard Ship Safety also provided advisory services to NORDREG throughout the season, on requests for Zone entry clearance for ships. Additionally, guidance and training was provided by Ship Safety Branch nautical surveyors, to Port Wardens assigned to the ports of Nanisivik and Polaris.

Various structural, stability and machinery verification checks were carried out by Headquarters marine surveyors during the year, on approximately 36 separate vessels, for purposes of regulation compliance. Technical advice was also given, as requested by the Arctic Control Authority, to assess various proposals for Arctic transportation and development schemes, submitted by industry proponents.

Ship Safety (Northern) officers participated with COGLA in the assessment of drilling season extensions in the Beaufort. Ship Safety (Northern) also carried out extensive field trials of Arctic vessels in the Western and Eastern Arctic.

Marine Aids to Navigation

In the Hudson Strait, lighted aids on Coats Island, Charles Island, Mansel Island and Nottingham were converted from battery power to solar power. In addition, Radar Beacon (RACON) service was established at each of those sites.

CCG is studying the effectiveness of RACON service as a replacement for the radio beacon service currently provided in this area.

In September, 1983, site surveys were carried out on Griffith Island (near Resolute Bay) for the installation and testing of new power generating systems for marine aids to navigation and telecommunications. These power systems will be designed to operate unattended, 12 months per year. Tentative plans call for the first test system to be in place during the summer of 1985.

Western Arctic Operations

The Coast Guard Bay River District and the Beaufort Sea region are the two major areas of Coast Guard operations in the Western Arctic. Both areas are currently the responsibility of the Coast Guard Western Region. Five shallow draft CCG ships operate out of the Bay River District. These ships maintain 3 000 aids to navigation along the 3 600 kilometres of scheduled shipping routes on the Mackenzie and Athabasca Rivers, their tributaries and, with assistance from other vessels, another 2 500 kilometres of shipping routes along the Western Arctic coastline.

A helicopter, able to operate from three of the shallow draft ships as well as from the CCG Icebreaker Camsell, is assigned to maintenance navigation aids in the Mackenzie River system.

Arctic Ice Conditions - Summer 1983

Overall ice conditions in the Arctic during the summer navigation of 1983 were more severe than those of 1982. In the Approaches to Hudson Bay, patches and strips of old ice persisted along the Labrador coast at the entrance to Hudson Strait well into August, about three weeks later than in a normal ice year. In Baffin Bay and Parry Channel, breakup was delayed and clearing was less extensive than in 1982. In the Western Arctic, a favourable "ice-year" was experienced in the Southern Beaufort Sea with a near normal breakup followed by the development of a broad area of open water and a near normal freeze-up. Breakup in the Beaufort Sea was close to normal in 1983 but the extent of clearing was significantly less than in 1982. Freeze-up in that part of the Arctic also began in the second half of September, about three weeks earlier than normal.

Nine Canadian Coast Guard icebreakers were deployed to the 1983 northern operations, to support commercial shipping and carry out specialized projects on behalf of government departments, mainly hydrographic, oceanographic and scientific surveys for the Department of Fisheries and Oceans, the Department of the Environment and the Department of National Defence.

Coast Guard Northern Region Development

The Administrator, CMTA, authorized the establishment of a Northern Directorate in Coast Guard effective August 4, 1981. The initial resources utilized were those of the Polar Icebreaker Project Group and those designated for Arctic activities in the Coast Guard Ship Safety Branch.

The purpose of this Directorate is to ensure that a single agency has the responsibility for planning and directing the operation of facilities and services required in the North as mandated to the Coast Guard through various Acts, Regulations and Cabinet Directives. The North in this context is defined as all Canadian waters north of the 60th parallel, and including Hudson, James and Ungava Bays as well.

Polar Icebreaker Program

Cabinet approved in August 1981, the preparation of plans and specifications for a conventionally powered icebreaker to meet the Arctic Shipping Pollution Prevention Regulations for a Class 8 ship. This phase has now been completed.

Prior to proceeding with the construction phase, Transport Canada will submit to Cabinet, a report prepared jointly with Energy, Mines and Resources, to justify the construction of the ship in relation to Arctic resources development. The departments are not, at this time, in a position to provide authoritative estimates on the timing of proposed Arctic developments and hence to recommend construction of the ship. The lead time for construction is estimated to be six years.

Therefore, Transport Canada prepared and submitted to Treasury Board a submission which requested approval to proceed with funded proposals for construction. The intent is to reduce the pre-construction phase without committing the government to a construction contract. Treasury Board approved, in October, 1983, the expenditure of two million dollars ($2 M) to obtain funded proposals from Canadian shipyards capable of building this icebreaker.

A request for proposals was issued on November 29, 1983 to five shipyards. Three shipyards submitted qualification proposals, now being reviewed and evaluated. It is anticipated that contracts for the contract definition activities will be awarded by the end of June, 1984.

Transport Canada, by requesting funded proposals, will obtain a construction estimate valid for an 18 month period, thus ensuring that the government will be in a position to respond quickly, should developments in the Arctic justify construction of a Class 8 icebreaker.

Arctic Ship Safety - Coast Guard Northern

This section has been primarily responsible for research and development (R&D) projects directed towards the updating of the Arctic Shipping Pollution Prevention Regulations. An Interim Standard for Structural Steel Requirements for Arctic Class vessels has been produced ad is now in the regulatory process. Other R&D projects involved participation of industry, other components of Transport Canada and other government departments and agencies.

In addition, the Arctic Ship Safety section participates annually with the Department of Indian and Northern Affairs and the Canada Oil and Gas Lands Administration in reviewing petroleum exploration and development operations in the Beaufort Sea. This review provides information to Coast Guard management enabling assessment of requests for season extensions in the Beaufort Sea.

Industry proposals concerning resource development in the Arctic are reviewed to assess proposed marine transport systems in accordance wi' 'he relevant Acts and Regulations. Several proposals have been reviewed or are under review.

Research and Development

Coast Guard Northern is responsible for research and development in support of Arctic marine transportation. The majority of the R&D projects are directed towards the updating of the Arctic Shipping Pollution Prevention Regulations concerning the design, construction and operation of ships and other marine vehicles intended for service in the Arctic.

Pollution Prevention Activities

In August, 1983, Coast Guard Emergencies personnel from Western Region carried out a joint pollution countermeasures exercise with Canmar Exploration. The exercise involved the deployment, testing and recovery of special pollution countermeasures equipment. This exercise had to be limited to Tuktoyaktuk harbour as severe ice conditions prevented the movement of small craft into the Beaufort Sea itself.

Regulatory Development

Coast Guard Northern is engaged in a number of departmental and external reviews of northern regulatory regimes with the varied aims of strengthening clarifying and updating the regulatory base. Sovereignty, the Law of the Sea, perceived overlaps in regulations, and the proposed extension to offshore developments of Canadian laws are the themes of separate reviews.

Water Transportation Assistance Directorate

The Water Transportation Assistance Directorate subsidizes essential water transport services where full cost recovery rates are impractical.

Review 1983-84

The Directorate's main Arctic activity is the subsidization of Northern Transportation Company Limited (NTCL) barge services from Churchill to the Keewatin ports. In 1983-84, this subsidy amounted to $643,435. The Canadian Marine Transportation Administration will assume responsibility for this subsidy program in 1984-85.

Transportation Research and Development

Economic Function: Research

Responsibilities

The Research and Development Directorate of the Strategic Planning Group of Transport Canada plans and coordinates transportation research and development (R&D) in the federal government. The Directorate's Transportation Development Centre (TDC) in Montreal undertakes R&D projects in support of TC's three operational administrations as well as long-range, national projects. The Directorate also conducts transportation R&D projects supported by the National Energy Program (NEP).

Review 1983/84

This was the second full year of the three-year (81/82 to 83/84), $14 million, accelerated Arctic Marine R&D program approved by Cabinet in June, 1981. The program, coordinated and managed by the Canadian Marine Transportation Administration of Transport Canada and implemented jointly by TC, DFO and DOE, is aimed at ensuring safe and reliable, year-round marine operations in the Canadian North. TDC's base budget funds are augmented by this program and by the NEP program for R&D activities in the North. In addition, funding for some projects is further augmented by shared cost arrangements with industry.

R&D activities of direct benefit to marine transportation in the North include:
Arctic Vessel Research
Icebreaking and Ice-Related Research
Ice Navigation Systems
Ports and Harbours.

1. Arctic Vessel Research

The icebreaking cargo vessel M.V. Arctic underwent a continuing evaluation. A detailed analysis was made of the various data packages collected during previous years. Projects to optimize the bow shape of the M.V. Arctic and to define a next generation ship-instrumentation system for further data gathering were begun.

Other projects relate to regulations governing the design of components for ships operating in ice. These include continuing research into protection of propellers in ice, the interaction of propellers and ice, and the measurement of ice impact loads on the blades of nozzle-protected propellers. A study predicting heat flow through a ship's hull was completed. Weld corrosion and the suitability of various protective coatings ot counteract such corrosion were investigated, and development of an analytical model to calculate the dynamic response of ship's structure to various bow impact loads was begun.

A 1/5th scale model of an innovative hydrostatic stern tube bearing for use on large tankers to extend the life of stern gear was tested. A long term research effort in the field of ship manoeuvring simulation in ice was defined, in to develop research capability on ship manoeuvring in Arctic ice.

2. Icebreaking and Ice-Related Research

Projects in this category with potential benefit for Arctic use include testing on the icebreaking resistance of Small Waterplane Area Twin Hull (SWATH) ships, (polar LNG tankers of up to 140,000 m^3 capacity) a study of the basic theories concerning icebreaking resistance mechanisms. Work related to the possibility of transferring air cushion icebreaking technology to Arctic applications continues.

3. Ice Navigation Systems

Technologies designed to avoid ice impact and to reduce its effect when it does occur, continue to have a high priority for TDC funding.

An all-weather, airborne, sea-ice thickness sensor was successfully field tested.

A major program to define a remote, sensing, communications, data processing and navigation system (REMSCAN) for providing ice information to marine transportation operators and ship masters in the Arctic was begun.

A preliminary specification for the development of an ice hazard and detection/collision avoidance system was developed. Discussions with industry continue to determine specific system requirements.

Work continues on the quasi-doppler marine VHF direction finder.

4. Ports and Harbours

Efficient port operations and installations are paramount to the productivity of shipping in the North. TDC tested the suitability of ice-cutting techniques to resolved the problem of ice interference with berthing operations. An investigation of the compaction process of frozen soil was made to provide base data for possible equipment development for Northern excavation.

Other projects

Not all R&D relating to the North is marine-oriented. Two significant TDC projects related primarily to air operations in the North. A prototype unattended navigation facility to improve air-to-ground communication and navigation was tested ad evaluated. Work is now under way on several design refinements to the facility.

Several concepts were developed for an offshore air terminal to serve drilling rigs in Canadian oil resource development areas.

TDC is also supporting a major design study for an Arctic snowmobile to enable design of a vehicle offering greater economy and reliability in the North.

Coast Guard Northern

Coast Guard Northern is responsible for research and development in support of Arctic marine transportation. The majority of the R&D projects are directed towards the updating of the Arctic Shipping Pollution Prevention Regulations concerning the design, construction and operation of ships and other marine vehicles intended for Arctic service.

This past year, approximately $1.6 million and $770 thousand was managed on behalf of the Arctic Marine Research and Development Program and the Energy Research and Development Program, respectively.

Canadian Marine Transport Administration

Within CMTA, R&D is undertaken systematically in the area of transportation and related technologies.

Marine R&D is directed towards increasing the safety or technology efficiency of marine transportation and identifying technically feasible alternatives to support specific program objectives. It is used primarily to implement regulations, improve statutory services or introduce new services. Where the department augments the efforts of other departments, the provinces or the private sector, R&D is undertaken to accelerate progress in areas of pressing national concern, particularly industrial growth, regional development, training and overall productivity.

The marine R&D program involves activities with other governments, industry and universities, as well as within the federal government and focusses on those areas of marine technology which are critical to the delivery and maintenance of CMTA's specific mandate.

In addition, CMTA plans and promotes continuing R&D activities in respect of general marine technology and support to the commercial marine sector and allied industries. CMTA also incorporates emerging concerns for energy security, sovereignty and safety as a major departmental focus for marine research and development activities. During the period 1981 to 1983, more than 100 projects were initiated under the $14 million three-year Arctic Marine R&D Program. These included ongoing R&D into ship structure and ice interaction using the MV ARCTIC, Canada's only ice-strengthened bulk carrier, as well as other commercial and federal vessels. The Arctic Marine R&D Program has been extended for a second phase through 1984/85 and 1985/86 at $4 million per annum. Plans are under way to propose a subsequent five-year program at $8 million per annum.

In 1983/84, a major activity has been the development of a comprehensive Marine Transportation R&D Plan to ensure the development of an adequate transportation system in areas south of 60° N. Latitude.

In 1983/84, cooperation with the United States to promote marine transportation R&D was maintained at a high level. This cooperation was in the form of exchanges of information and joint research projects on navigation in ice, vessel vibration and stress. In addition, Canada entered into a feasibility study with Japan on possible cooperation in Arctic Marine R&D, and negotiated a Memorandum of Understanding with the Finnish government to provide for cooperation in the field of Arctic marine transportation R&D.

CMTA also has initiated a wide range of projects in cooperation with the marine shipping and shipbuilding industries. While many projects apply primarily in areas south of 60°, a number have universal application. The Marine Advisory Board is CMTA's primary link with the industry and provides direct feedback on the industry's priority concerns in the Arctic and elsewhere. Under its auspices, CMTA has undertaken significant new R&D into ice hazard detection, remote ice sensor systems, ship balasting in ice conditions, hull corrosion, friction-reducing systems, tug/barge combinations, and harbour ice control/management.

Government Relations Branch

Economic Function: General Government Services

The Government Relations Branch provides advice, coordination and liaison on multi-modal transportation policy matters between Transport Canada and the provincial and territorial governments.

The senior adviser for the North was involved in the attempted resolution of a number of issues affecting the North such as the temporary closure of the Whitepass and Yukon railway, airport matters at Tuktoyaktuk and summer re-supply in the Keewatin and Lake Athabasca regions.

The proceedings of the Northern Transportation Conference, held in Whitehorse, Y.T.; October, 1982, were released in the spring of 1983. In addition, a follow-up report on the issues identified at the conference was prepared and released to all attendees.

The branch is responsible for co-ordinating the department's native land claim negotiations and as such was active in the Council for Yukon Indians (CYI), Committee of Original Peoples' Entitlement (COPE and Tunavik Federal of Nanavut/Inuit Tapirisat of Canada (FTN/ITC) claims.

Work continued on the development of a new long term northern housing policy which was developed in a committee represented by all departments having a significant northern staff. The policy proposals are now with Treasury Board.

Veterans Affairs Canada

Economic Function: Welfare

Responsibilities

Veterans Services of the Department of Veterans Affairs provides health and social services, financial assistance and counselling to eligible veterans and their depandants. The Department also provides services to certain civilians whose work was closely related to that of the Armed Forces during wartime. The program has no district offices in the Yukon or Northwest Territories because of the small number of clients. Instead, counsellors visit the Yukon from the Prince George District Office. The Northwest Territories are served from the Edmonton District Office.

The *Veterans Land Administration* provides assistance, guidance and counselling to veterans established in the Territories under the Veterans' Land Act. These services make it possible for veterans, their heirs, devises or personal representatives to acquire title to the property on which they presently reside under an Agreement of Sale with the Director, the Veterans' Land Act.

The program has no district offices in the Yukon or Northwest Territories because of the very small number of clients. These areas are serviced from the Edmonton District Office.

The *Canadian Pension Commission* ensures that benefits available under the veterans' pension legislation are extended to all eligible veterans and their dependants. Services include counselling, help in applying for benefits available under the pension legislation, and medical examinations for assessing eligibility for benefits. The Vancouver and Edmonton District Offices provide the Yukon and the Northwest Territories with the same services as those available elsewhere in Canada.

The *Bureau of Pensions Advocates* provides a counselling service to pension applicants and pensioners with respect to their rights under the Pension Act and related statutes, assists them in the preparation of pension claims and represents them at hearings under the Pension Act.

This service is available to veterans of either wartime or peacetime service in the Canadian forces and their dependants, and to former members of the RCMP and their dependants.

Veterans located in the Yukon and the district of MacKenzie are served by the Bureau of Pensions Advocates District Office in Edmonton. Those in other parts of the Northwest Territories are served through the District Office in Winnipeg. However, anyone living in the Yukon or Northwest Territories can get help from any convenient district office.

If the Canadian Pension Commission denies a pension application, the applicant may request to be heard by an Entitlement Board. The Canadian Pension Commission will pay travel expenses for the applicant and witnesses to the place of hearing.

Review 1983-1984

At March 31, 1984, 38 veterans or their families in the Northwest Territories were receiving pensions for disability or death. In the Yukon, 65 individuals had been awarded similar pensions. In the Northwest Territories, there were 14 recipients of either War Veterans Allowances or Civilian War Allowances, and 95 in the Yukon.

Government of
the Northwest
Territories

Commissioner's Activities

In 1983 one of Commissioner John Parker's major thrusts was the continuing devolution of responsibilities from the Commissioner's office to elected ministers. After consultation with the Honourable John C. Munro, the Departments of Information and Public Works, administered by the Commissioner and Deputy Commissioner respectively, became the responsibility of elected members of the Executive Council, thus placing all but one department under ministerial control.

Further significant changes to the Executive structure occurred in June. The chairmanship of the Financial Management Board was assumed by the Honourable T.H. Butters, Minister of Finance, with Mr. Parker taking over the deputy chairman's position. The Leader of the Elected Executive moved into the role of deputy chairman of the Executive Council, while the Commissioner continued as chairman. These changes strengthened the roles and responsibilities of the elected members in the move towards responsible government.

The Commissioner's Awards Committee considers nominations and makes recommendation to the Commissioner regarding these awards, which are presented to people who have distinguished themselves by exceptional public service or by acts of bravery.

In January, Mr. Justice Joseph Potts of Ontario was appointed to head a three-member electrial boundaries commission to study the size and number of constituencies in the N.W.T. Chief Jim Antoine of Fort Simpson and David Alagalak of Eskimo Point served as commission members. Extensive community consultations were carried out and the commission's report to the Legislature recommended that the number of constituencies be increased to 24 and that certain adjustments be made to constituency boundaries. The recommendations, in large measure, were accepted and enacted.

Throughout the year, Commissioner Parker spoke to a number of groups and organizations in the Northwest Territories and southern Canada. His two major themes were his support of political and constitutional development in the north, and adverse effect to uninformed conservationist groups on the traditional and renewable resource economy.

On February 2 in Yellowknife, the Commissioner opened the tenth session of the Ninth Legislative Assembly. While various economic sectors were experiencing major downturns, he noted in his address that there were reasons for cautious optimsm about the days ahead.

The eleventh and final session of the Ninth Assembly was opened by the Commissioner in Yellowknife on August 30. In his opening address Mr. Parker recognized the contribution which has been made by the Honourable John Munro and other federal ministers throughout the life of the Ninth Assembly towards meeting northern constitutional and political aspirations. Assent was given to bills on September 10, the day the Assembly prorogued. The Commissioner dissolved the Ninth Assembly on September 16 and with the signing of the writs of election for 24 constituencies on September 19 preparations were under way for the election on November 21.

The position of Deputy Commissioner became redundant at the end of 1983 and an eighth ministerial position was added to the Executive Council. Mr. Robert Pilot, formerly the Deputy Commissioner, was appointed deputy minister of the Executive Council, effective December 12. The new position strengthens the administrative and operational side of the Executive Council office.

An important step in environmental protection was taken during 1983 with a complete re-organization of the Arctic Seas oil spill contingency plan. Chairing an intergovernmental committee, with strong support from all government agencies involved, the Deputy Commissioner guided the realignment of government responsibilities in establishing a much improved contingency plan for off-shore non-ship oil spills.

Justice and Public Services

Economic Function: General Government Services

Minister's Introduction

During the past year, the Minister of Justice and Public Services, the Honourable George Braden, continued to place emphasis on the priorities of the government and the needs of the people of the Northwest Territories to be addressed by the Department of Justice and Public Services

The justice of the peace training program became fully operational in 1983, with the appointment of a justice of the peace training officer and an assistant training officer. Workshops and training seminars were held in all regions of the Territories.

Mr. Braden and his staff contributed substantially to the success of the aboriginal and constitutional rights meetings which took place during the winter of 1982-83, culminating in the First Ministers' Conference in March 1983.

Mr. Braden attended the federal-provincial-territorial conference on status of women matters in May 1983 and was responsible for many of the initiatives leading up to the establishment of the status of women program in the Government of the N.W.T.

In keeping with the government's policy to give more responsibility to the regions, Mr. Braden directed the placement of a regional superintendent of justice and public services in the Baffin region.

Two major pieces of legislation, the Liquor Ordinance and the Mine Safety Ordinance, were enacted.

A human rights code for the Northwest Territories is being developed for presentation to the Legislative Assembly.

Directorate

The directorate provides overall guidance and direction for all services and programs offered by the department and ensures that statutory obligations are met. The directorate provided the necessary support to the ministers representating the Territorial Government at the First Ministers' Conference on Aboriginal Rights and the Constitution.

Development of a human rights code for the Northwest Territories was begun.

Legal Division

The legal division provides legal advice and services to all government departments, secretariats, boards, and the N.W.T. Housing Corporation.

The legal division is also responsible for administering the criminal injuries compensation program pursuant to the Criminal Compensation Ordinance.

The public trustee office provides for the administration of estates and trusts of infants, mental incompletents and certain intestates. The public trustee administers all Indian estates in the Northwest Territories, and has approximately 340 estates under administration.

Legislation Division

The legislation division is responsible for the preparation of all Territorial legislation and also provides legal opinions in the development of legislation.

All legislation, orders, appointments and notices are published in the Northwest Territories Gazette. Annual volumes of the ordinances and legislative summaries of the legislation passed at each session of the Legislative Assembly are published.

The division is also responsible for law reform in the Northwest Territories.

Court Services

The court services division is responsible for providing administrative support to the Supreme Court and the Territorial Court of the Northwest Territories. The inspector of legal offices administers the justice of the peace and coroners programs, as well as the federal firearms program.

The inspector of legal offices is responsible for recruitment and training of approximately 120 justices of the peace and 96 coroners in N.W.T. communities. The justices of the peace perform a valuable service, hearing approximately 40 per cent of all criminal cases.

Justice of the peace training seminars were held in the Inuvik, Keewatin and Kitikmeot regions in 1983.

Land Titles-Legal Registries

The land titles section is responsible for the administration of a Torrens system of land registration. Ownership of and interests in privately owned land are established by the filing or registration of documents in the land titles office. Approximately 3,000 documents were registered during 1983 compared to 2,000 documents in 1982.

Vital Statistics

	Births	Marriages	Deaths	Adoptions	Change of Name
1983	1246	250	240	165	57
1982	1078	230	185	102	35
% Increase	13%	8%	23%	38%	39%

The legal registries section is responsible for incorporating both profit and non-profit corporations, as well as maintaining a registry of companies incorporated outside the Northwest Territories but operating within the Territories. The number of corporations incorporated or registered during 1983 was expected to exceed 400 compared to 305 during 1982.

Legal Services Board

Established under the Legal Services Ordinance, the legal services board ensures the provision of legal services to persons in need of legal aid throughout the Northwest Territories. Legal assistance is provided to recipients by members of the private Bar.

The Native Courtworkers' Association and Maliiganik Tukisiiniakvik (the legal aid clinic in the Baffin region) have been established as regional committees under the Legal Services Ordinance.

During 1983, the courtworker program was expanded with the placement of a courtworker in the Keewatin region. A lawyer located in Inuvik is a member of the legal aid panel and provides legal aid services in the Inuvik region.

Safety Division

The safety division sets safety standards in the Northwest Territories for fire, mechanical, electrical and occupational health and safety. In 1983 the Gas Protection Ordinance and emergency measures, including the transportation of dangerous goods, were assigned to the Division.

Fire Safety

The number of fires and fatalities in 1983 decreased from the previous year.

In November 1982, new regulations were approved by the Executive Council under which all buildings in the multi-unit residential classification must have ionized, hard-wired in, U.L.C. approved smoke alarms. The use of smoke detectors is expected to further decrease the number of fire-related fatalities.

Seven new fire trucks were purchased. Two were placed in the Baffin region, four in the Inuvik region, and one in the Fort Smith region. Local fire fighters were trained in the use of this equipment.

Mechanical/Electrical

The mechanical/electrical section administers the Electrical Protection and Boilers and Pressure Vessels Ordinance. The major aspect of this work involves on-site inspections of electrical installations and boilers and pressure vessels. A revised Canadian Electrical Code was brought into effect during the year.

The number of inspections and registrations of boilers and pressure vessels increased, due in part to developments in the Inuvik and Norman Wells areas.

Work to develop a certification procedure combining the building operator program with an apprentice trade similar to the housing maintenance servicemen was begun.

This section also provides a gas inspection service.

Occupational Health and Safety

A review of the special occupational health and safety problems facing northerners was essentially completed.

Other major projects included the development of an occupational health and safety information and resource library and the development of pamphlets, called N.W.T. Safe Living Books, in both English and Inuktitut.

A safety officer from this section was assigned to the Norman Wells project.

Workers "right to refuse" legislation was enacted by amendment to the N.W.T. Safety Ordinance. This legislation protects N.W.T. workers from disciplinary action if they refuse to work in conditions posing imminent danger to their health and safety.

Emergency Measures

Civil emergency measures planning was transferred from the Executive to the safety division in 1983. The co-ordinator is responsible for both the Transportation of Dangerous Goods and Civil Emergency Measures ordinances, with the mandate to provide an effective, coherent, and rapid response to any real or apprehended emergency involving a community or highway system in the Northwest Territories. Included in the mandate is responsibility to assist all regions in the formulation and exercising of regional and community emergency planning and to act as liaison between the Government of the N.W.T. and Emergency Planning Canada, through the Regional Director EPC in Edmonton.

Labour Services

The labour services section administers Northwest Territories labour and human rights law. The principal statutes are the Labour Standards Ordinance and the Fair Practices Ordinance.

The Labour Standards Ordinance guarantees minimum employment standards. The labour standards officer enforces and applies that statute, as well as investigating complaints made under it. The labour standards board has been established, made up of members of the public, to hear appeals from decisions of the labour standards officer.

Human rights complaints are investigated through the medium of the Fair Practices Ordinance which sets out prohibited grounds of discrimination. In addition to those concerning employment related matters, complaints dealing with provision of services, accommodation, membership in trade unions and with respect to discriminatory publications are considered.

The mining inspection division compiles and maintains statistics on accidents and on production. Accident frequency and severity decreased over previous years.

Consumer Services

Economic Function: General Government Services

Consumer Affairs

The consumer affairs office investigates consumer complaints, mediates disputes between landlord and tenant, administers the licensing of vendors, direct sellers and collection agents, as well as the issuing of lottery licences to religious and charitable organizations. This office also serves as the metric information centre for the Northwest Territories.

Information brochures were developed in both English and Inuktitut and distributed throughout the Territories. AnikInfo spots, aired on the C.B.C. Northern Television Service, were produced.

Insurance, Professional and Business Licensing

This section is responsible for the registration and licensing of doctors, dentists, opometrists, ophthalmic medical assistants, pharmacists, psychologists and veterinarians. A decrease in the number of licenses issued - from 382 in 1982 to 180 in 1983 - was due in part to the increased length of stay of professionals in the Territories.

Eight hundred unincorporated businesses were licensed in 1983. A total of 3850 certificates of all types were issued in 1983.

Prince of Wales Northern Heritage Centre

Economic Function: Culture and Recreation

From January 1983 through August 1983, a total of 26,792 visitors passed through the Prince of Wales Northern Heritage Centre, breaking all previous records for attendance.

The second volume of "Sources for Northwest Territories History" was published. Archival staff continued to acquire photographs and documents relevant to the history of the Northwest Territories, and assisted Fort Good Hope in establishing a community museum/archives.

Major projects completed during the year included a polar bear exhibit on display in the front lobby and the mounting of an exhibit of Dene women's art. The Northern Heritage Centre presented 12 temporary and travelling exhibits developed from its collections, on loan from other institutions or produced in cooperation with community groups. Three travelling exhibits dealing with Polar Bears, Archaeology of the N.W.T., and the North Before People produced by the centre travelled to various communities throughout the Northwest Territories.

Educational activities and special events taking place in 1983 included: a children's film festival held to celebrate Heritage Day; Caribou Carnival festivities including communications exhibits and demonstrations; a Tim Sikyea fashion show; and a variety of vehicles displayed in the parking lot for Vehicles Day.

Over 2000 artifacts, specimens and works of art became part of the permanent collections in 1983. This included the repatriation of five collections of early ethnographic material from southern Canada and the United States.

The museums advisory services assisted community museums, historical societies and heritage groups in the N.W.T.

The archaeology program expanded its capabilities with the secondment of a historical archaeologist from Parks Canada for a two year period. The historical archaeologist will compile an inventory and conduct field assessments of post-contact archaeological sites in the Northwest Territories.

The centre continued to assist the Northern Heritage Society's archaeological field school on Somerset Island, which involved students from across the Northwest Territories. A similar training program was incorporated into one of the centre's rescue archaeology operations in the Mackenzie Delta.

An inventory and assessment of historic and prehistoric sites along the Mackenzie River resumed in the vicinity of Fort Norman.

Library Services

The agreement with the Province of Alberta which permits N.W.T. participation in their inter-library loan circuit and Zenith reference service was established on a permanent basis.

Audiences totalling approximately 2000 attended various library programs throughout the North. The annual book festival and the children's book festival were celebrated.

Circulation figures showed an upward trend and materials available in all services increased.

Priorities and Planning Secretariat

The Priorities and Planning Committee was established in 1980 as the forum for consideration of new policies and programs, government priorities and organizational change. A committee of the Executive Council, it is chaired by the Leader of the Elected Executive, the Hon. George Braden.

The Priorities and Planning Secretariat, formally recognized in December 1981, reports to this committee, provides support services and advises members on proposals for committee consideration. The secretariat is also responsible for supporting the Executive priorities and long-term government organizational plans.

Status of Women

The Honourable Dennis Patterson assumed full responsibility on May 20, 1983 for the status of women portfolio.

It was agreed that an advisory council on the status of women with an interim co-ordinator would be formed. The purpose of the council is to provide direction to the government on all matters of concern to women.

Government Services

Economic Function: General Government Services

Introduction

The Department of Government Services, provides support to other departments in areas such as purchase and management of supplies and materials, communications, transportation and computer-related services. In addition, the department also administers the liquor system, the motor vehicles registry and the distribution of petroleum products to communities not served by the private sector.

In 1983, Mr. Butters attended the Northern Aviation Transportation Association Conference in Yellowknife the Minister, Mr. Butters minister announced that the government would implement a new charter aircraft directive that would distribute charters to carriers on an equitable basis based on number and types of aircraft. He also announced that the department would continue to monitor the industry for adherance to the safety and maintenance standards established by M.O.T. He stressed the need to support local carriers.

Planning progressed in 1983 to improve enforcement of motor vehicles regulations at the weigh scale operation. This initiative will address the concern expressed by the local trucking industry that they were not being afforded the degree of economic protection stated in N.W.T. legislation. Plans call for the implementation of a compulsory registration system and the construction of weigh scale facilities in Inuvik in 1984 and fort Liard in 1985. A revised Motor Vehicle Ordinance will be introduced to the Legislative Assembly in 1984.

In 1983 the Legislative Assembly passed a new Liquor Ordinance, which resulted in the transfer of responsibility for the Liquor Licencing board to the Minister of Justice and Public Services. Mr. Butters continued to be responsible for the distribution of liquor products within the Northwest Territories and for the operation of government liquor stores and agents.

During 1983, major improvements were made to the department's petroleum products accounting system in response to audit observations made by the Auditor General of Canada. Also completed was the measurement of the government's tank farm inventory. Options were developed on bulk fuel agencies which could result in the private sector assuming responsibility for the distribution of petroleum products.

Systems and Computer Services

The systems and computer services division is responsible for delivery of computing resources, services and expertise required by governmental departments and organizations. During 1983, construction of new facilities, which will house the division's staff and computer equipment, was completed.

Information systems development slowed in 1983, due to the climate of financial restraint. Staff undertook a project to improve the information system serving the petroleum products division. The enchanced system is expected to be in operation early in 1984.

A systems support section established in 1982 provides day to day systems maintenance functions for all operational computer systems used by the government.

During 1983, the government's computing facilities were upgraded with the installation of a Hewlett-Packard 3000 Series 64 computer. Transfer of the data entry function to the department was completed.

Supply Services

Through the purchasing and distribution sections, the supply services division is responsible for the purchase and management of supplies and materials for the government. In the regions the three main functions (purchasing, warehousing and transportation) have been managed as separate units. In 1983, there was movement to reconsolidate these functions into a supply services materials management organization.

Continued application of the northern preference policy resulted in an increase in government purchasing in the Territories. A review of the policy was undertaken. In addition, a northern contractors registry was established for all types of government contracting and a directory of northern contractors will be published.

A new aircraft charter directive was developed and implemented.

An improved aviation safety program was developed by up-grading and formalizing standards of safety and maintenance by which charter carriers doing business with the government will be assessed.

Agreements were developed to provide transportation assistance funding to Pelly Bay and Snare Lake, in addition to that provided to Fort Franklin. Operational responsibility for management of these programs was decentralized to the regions.

Office Services

The office services division is responsible for provision of office support services to all government departments. This includes records management telecommunications, postal services and the office equipment and furnishings program.

During 1983, a new office equipment and furnishings manual and catologue were partially completed. The development of an accountable assets inventory was begun.

A records management program to meet government needs is being planned. The construction of a new record centre was approved.

Motor Vehicles

The motor vehicles division is responsible for enforcing the Vehicles Ordinance, the Public Service Vehicles Ordinance and attendant regulations, which provide for the licensing and registering of drivers and vehicles in the Northwest Territories.

Vehicle registrations totalled approximately 22,5000 in 1982, while approximately 21,5000 were recorded as of September/83. As of September, 17,000 drivers' licences had been issued in 1983.

A driver examination program was conducted for the first time in Frobisher Bay in 1983.

Petroleum Products

The petroleum products division supplies a variety of petroleum products in 45 communities in the Northwest Territories, where such service is not available from the private sector.

The aircraft refueling facility in Rankin Inlet, destroyed when a helicopter crashed in August 1982, was replaced. An aircraft refueling facility in Coppermine was completed, and a new one is being built in Pond Inlet.

Major tank farm projects are planned for, Lac La Martre, Nahanni Butte, Rae Lakes, Trout Lake, Arctic Red River, Tuktoyakutuk, Broughton Island, Hall Beach, Pond Inlet, Eskimo Point, Repulse Bay and Spence Bay.

Liquor Control System

The system manages the purchase, distribution and sale of alcoholic beverages to the residents and licensees of the Northwest Territories, through three government stores, six agencies and two warehouses.

In 1983 gross sales increased by 13.8%. Actual net income was $8.2 million.

Finance

Economic Function: General Government Services

Minister's Introduction

During 1983, the Minister of Finance, Tom Butters, sought to increase the fiscal responsibility and accountability of the Government of the Northwest Territories through the adoption of financial practices common in provincial and federal administrations.

Reinforcing this territorial initiative, the Hon. John Munro in 1983 announced that an elected member of the Executive Council would be appointed Chairman of the Financial Management Board of the Government of the N.W.T. Mr. Butters assumed this responsibility on June 1, 1983. The Financial management Board is made up of Executive Council members who determine government budget and funding allocations and expenditures in keeping with the program priorities identified by the Legislative Assembly.

Mr. Butters continued his efforts to resolve the problems created for northern residents associated with the announced intention of the federal government to begin the taxation of northern allowances beginning January 1, 1984. Mr. Butters met and spoke with the Hon. Marc Lalonde on a number of occasions to present and obtain federal consideration of the special situation experienced by the residents of the Northwest Territories.

To research and substantiate this contention, Professor Richard Bird of the University of Toronto was commissioned to report on the matter.

Professor Bird's report, co-authored by Enid Slack and entitled 'Report on the Taxation of Northern Allowances', identified grounds for amendment of the federal regime and suggested new concepts of indexation for taxing persons residing and working in Canada's North.

In December, John Munro, Minister of Indian and Northern Affairs, announced on behalf of the Honourable Marc Lalonde, that the special tax remission for housing and travel benefits received by employees in Northern Canada would be extended indefinitely.

Mr. Butters actively pursued the taxation issue related to a reassessment of prior years' tax on a small number of hunters and trappers in the Northwest Territories. This action, complementing representations made by other individuals and organizations, resulted in the successful forgiveness of the reassessments by Revenue Canada.

In support of the northern trapping industry, department officials under Mr. Butters' direction, developed and recommended to the federal government a special taxation regime for the trapping industry, analogous to the regime developed for farmers and fishermen, which proposes that certain capital and operative costs associated with the trapping industry be tax deductible.

During 1983, the NWT Minister of Finance continued to press for the implementation of the concept of formula financing for the Northwest Territories and to identify the elements comprising the federal program of 'discretionary funding', developed to assist the territorial government to fund the capital costs imposed on communities where large scale exploration or development activity is occurring.

The Minister of Finance, has Executive responsibility for the Department of Finance. The major function of the department is to give overall direction in financial management to the government and to provide the basic accounting and financial service system in support of government operations.

Administration

The administration division is responsible for the overall direction and co-ordination of the Department of Finance. The division works with other divisions of the department to develop program planning and resource requirement forecasts, implement approved plans through the main estimate budget process and to control implementation through expenditure control and variance analysis.

The division provides departmental services relating to personnel administration and maintains departmental expenditure records.

Treasury

The treasury division is responsible for collecting and reporting on all government revenues. It provides a central debt collection service to maximize the recovery of debt owed to the government; administers the provisions of the Income Tax, Petroleum Tax and Tobacco Tax Ordinances and audits the records of agents who collect the taxes.

In addition, it administers and co-ordinates the government' insurance and risk management program, co-ordinates banking and cash management functions and provides technical support in development of fiscal policy and economic analysis.

During 1983, emphasis was placed on the development of policies and improvements to procedures to more fully utilize the benefits available from the financial information system.

New government payment and collection policies were introduced which, which ensuring northern businesses received maximum benefits, provided improved cash management processes throughout the government.

During 1984, emphasis will be placed on development of information and systems related to formula-based financing and continued examination of the existing revenue base. More effective revenue management will be emphasized by introducing procedures which provide more accountability for revenue management at the department level.

Comptrollership

The comptrollership division is responsible for the preparation of financial management information, including the Territorial Accounts; for developing, co-ordinating and implementing financial policies and procedures, which provide for the effective control and reporting of all government expenditures; and for payment of all government employees.

During 1983, this division concentrated on orientation of departmental and regional finance operations in the effective use of the financial information system. Revisions were made to financial regulations, policies and procedures required by the Financial Administration Ordinance.

In 1984 the major objective will be the development of financial regulations and accounting policies aimed at further improving financial administration across the government.

Financial Management Secretariat

The Financial Management Secretariat provides advice and support services to the Financial Management Board.

The Honourable Tom Butters assumed the chairmanship of the Financial Management Board on June 30, 1983, a position previously held by the Commissioner.

The secretariat is responsible for development of the main estimates, five-year program forecast, supplementary appropriations and quarterly variance reports, negotiations with the federal government for territorial funding, and provision of administrative and working support to the board.

The program budgets and analysis section is responsible for providing senior level budget management and counsel to the government, primarily focussing on the budget cycle.

In 1983, this section published main estimates preparation instructions designed to allow easier understanding of the government's budget and resource allocation processes. To complement this process, the section also began a training program for the purpose of improving financial management and the understanding of government financial systems.

Other major projects undertaken by the section in 1983 included a complete revision of the Financial Management Board handbook, incorporation of the government priorities process into the budgeting system, five year program forecast instructions designed to improve long range planning, production of a quarterly variance reporting package for board members and a study on the computerization of the budget process.

The financial planning and analysis section is responsible for providing senior level financial management and advice to the government.

In 1983, the section resumed negotiations with the federal government following the announcement by the Minister of Indian Affairs and Northern Development of the department of a formula-based approach to territorial financing.

With the proclamation of a new financial Administration Ordinance in September, 1982, the Financial Management Board was given responsibility for evaluating programs as to economy, efficiency and effectiveness. To support the board's effort in the section began development of a performance measurement and evaluation system, to improve program delivery.

Audit Bureau

The Audit Bureau, reporting to the Deputy Commissioner, provides an internal government audit function and is responsible for independently reviewing departmental operations.

Another major responsibility of the Audit Bureau is the performance of attest audits of Government of the N.W.T. financial claims and cost reports, prior to their provides financial audit services to departments with respect to contributions to external organizations

The Auditor General of Canada, in his report to the Legislative Assembly, recommended that the Audit Bureau acquire computer audit expertise. Action was initiated to acquire and develop this capability.

In addition to an extensive audit program at headquarters, the bureau performed approximately 35 audits in 14 communities throughout the N.W.T. during 1983.

Personnel

The Department of Personnel is responsible for the planning and coordination of personnel management within the public service of the Government of the Northwest Territories.

Personnel Services

The personnel services division is responsible for providing recruitment and job evaluation services to all Territorial Government departments.

Of the 764 positions staffed in 1983, 647 northerness were hired while 117 came from outside the Territories. This compares to a total of 886 positions filled in 1982, of which 768 were Northern hires. Of the positions staffed in 1983, 134 were teaching positions.

During 1983, 29% of all positions staffed were filled by native Northerners while 85% of all positions staffed were filled in the North. Total staff turnover was 19%, down considerably from the 24% turnover figure in 1982 and the 32% figure in 1981. Although the state of the Canadian economy was partially responsible for the reduction in turnover, it appears that the Southern recruitment restraint policy is now paying long term dividends and is helping to reduce turnover at both middle and senior management levels.

Staff Relations

A number of major policy and legislative changes took place in 1983. Wage restraint legislation was implemented in April 1983 for the Public Service Association and in September 1983 for the Teachers' Association. The Legislation generally extended collective agreements for two year periods with salary increases of 6% in the first year of the contract and 5% in the second year.

The Public Service Ordinance was amended to further define the political rights of employees.

A conflict of interest policy was implemented.

Implementation of the staff accommodation policy resulted in the sale of over 14 housing units in both Yellowknife and Fort Smith and the dropping of a number of major leases with landlords who currently provide housing to public servants.

Staff Development and Training

During 1983, 65 courses were conducted throughout the public service with 767 employees receiving training. Many employees were also enrolled in correspondence and university extension programs.

Although the education leave program was subject to economic restraints, 17 employees were enrolled in continuing programs leading to degrees or professional designations. There were no new enrolments in education leave during 1983, although six employees proceeded on short-term leave to complete academic programs of one semester duration.

The in-service training program continued to offer long-term Northerners employment opportunities through training. The number of employees in the program increased to approximately 70. This program has proven to be an effective method of bringing Northerners into officer level and technical positions in all government departments and all regions. Eighty-four percent of trainees have been native Northerners.

The office of native employment provides counselling services to Norther native people on employment opportunities with the Government of the Northwest Territories. The office also serves the needs of native employees by providing counselling services and identifying training opportunities for career development. The number of native employees has remained fairly constant for several years and represents 33% of the work force.

Finance and Administration

The finance and administration division coordinated and monitored all aspects of departmental resource utilization through budget forecasts and internal resource management techniques.

The computerized Personnel Information System was enhanced to include position control data.

Economic Development and Tourism

Economic Function: General Government Services

Minister's Introduction

The Minister, the Honourable Arnold McCallum reviewed departmental goals, objectives and organizational structure.

At the February 1983 session of the Legislative Assembly, Mr. McCallum indicated that formalized goals, objectives and strategies would be prepared. At the May session, Mr. McCallum tabled the goal, objectives and strategies approved by the Executive Council.

At the same session, the Assembly was informed that a department action plan would be developed to meet the new approaches. Rather than being simply an internal exercise, it was decided to seek wide public input into the actions required. To this end, the minister widely circulated the goal, objectives and strategies of the department, requesting public input for the action plan.

An in-depth review of organization structure was undertaken with a new structure approved by the Executive Council in October. An assistant deputy minister responsible for program delivery was appointed. The main operating arms of the department in headquarters will be the divisions of business development and tourism and parks. Separate planning and policy groups have been established, reporting directly to the deputy minister.

Increased emphasis will be placed on the development potential of both non-renewable and renewable resources. The needs and development of northern business will be a high priority as will the continued promotion and development of the tourism industry. The primary role of regional offices in program delivery will be recognized in the organization structure and program development.

A four year, $21 million economic development agreement between the Federal Government and the Government of the N.W.T. was signed in December 1982. During 1983, three subsidiary agreements were concluded: $5.51 million for human resource development, $10.75 million for domestic market development and $4.63 million for natural resource development.

Planning and Resource Development

The planning and resource development division is responsible for economic planning and economic and policy/program analysis for the department. In this capacity, the division promoted business and employment opportunities. In addition to being responsible for the action plan development and review committee, the division played a key role in the joint needs assessment committee. During 1983, efforts were focussed on assisting the local economy to cope with the national economic recession.

The economic planning secretariat continued work on developing a data base of economic indicators, information sources and potential revenues from resource development projects. Keewatin region economic base study and Beaufort Sea hydrocarbon development revenue analysis were done. In addition to the completion of manpower and business development policies, other initiatives included the development of financial assistance to business policies and programs, a tourism policy and strategy and a renewable resource use policy.

The mineral and petroleum resources section focussed on the review and monitoring of resource projects to maximize northern participation and benefits. In addition to the development of socio-economic agreements, the section provided the opportunity for Territorial Government input into Canadian oil and gas lands administration exploration agreements. The section also acted as departmental co-ordinator for participation in the federal environmental assessment and review of the Beaufort Sea hydrocarbon project. The section served on the intergovernmental working group on mining, the northern minerals advisory committee and the regional environmental review committee.

The division had input on development of a comprehensive N.W.T. Business Directory for promotion of northern goods and services, research in the areas of prospector assistance and rotational assistance, development of the department's new goals and objectives and an action plan to implement the department's new thrusts.

Commerce

The commerce division comprises five services: small business development, co-operatives, commercial enterprises, arts and crafts and financial services.

Business Development

The business development service provides financial and technical assistance to small businesses including commercial renewable resource harvesters and arts and crafts producers.

Liaison is maintained with resource developers to ensure maximum participation of local entrepreneurs in spin-off business opportunities and the co-ordination of resource developers' initiatives regarding local business participation.

Two financial contribution programs are administered by the business services section. The business development and the financial assistance to business programs stimulate business development by assisting in the financing of capital assets for new or expanding businesses and working capital for businesses in financial difficulties.

Financial Services

During the 1982/83 fiscal year, the Eskimo loan fund and business loans and guarantees fund boards were amalgamated to improve administrative efficiency. The board approving nine loan applications under the Eskimo loan fund totalling /1,798,360. A further 64 loas totalling $4,301,489 were authorized under the Territorial Government's business loans and guarantees fund.

The Special ARDA program, which provides financial contributions to businesses and organizations, particularly native development corporations, approved 49 contributions amounting to $2,292,755. Monies were allocated in the following areas: primary producing activities, research and planning, and commercial undertakings.

Renewable Resource Development

Tangible growth in the renewable resources sector was hampered over the past year by international events over which the local industries had limited influence. Fish and lumber prices were generally lower due to depressed world demand and seal skin harvesting declined drastically as a result of the ban on the importation of Canadian seal skins by some European countries.

The commercial fishery experienced a decline in prices. The prices for whitefish, the predominant commercial species, averaged 10 percent less than the year before. This situation, combined with higher operating costs, would have resulted in reduced incomes had the department not implemented a price support program. During the fiscal year approximately 1,550,000 kg of fish were harvested on a commercial basis. The department continued its efforts to improve harvesting and marketing of the Northwest Territories fisheries resources.

The N.W.T. forest industry is total production was 30 percent below that of the previous year. The largest lumber producer. Slave River Sawmill Ltd., ceased production due to a fire in August, 1983.

Arts and Crafts

The economic decline throughout Canada also had an adverse effect on the art and craft industry. To counter this, the department provided the services of a consultant to two cooperatives that are major sculpture producers. It also developed a closer working relationship with the federally supported agencies which encourage northern art and craft production.

Co-operatives

The co-operative system in the N.W.T. maintained its position over the past year despite a downturn in the Canadian economy. Sales and other revenues totalled $22,857,175. A net savings of $405,991 was realized. Permanent employment remained at 349 positions and total direct wages and benefits exceeded $3.5 million. During the year, a proposal was completed for joint federal/territorial funding of field services support to co-operatives.

In addition, the Hillside Housing Co-operative in Frobisher Bay and the End of the Road Co-operative in Inuvik were incorporated. The Borealis Housing Co-op constructed approximately 50 units in Yellowknife.

Commercial Enterprises

Efforts by the department to privalize craft shops were somewhat hindered by the estimated 30 to 40 percent decline in arts and crafts sales across Canada.

Manpower Development

The division provides a focal point for employment, industrial training, apprenticeship, career development and related support programs for Northerners in business and industry.

Emphasis was placed on employment opportunities in the oil industry, where approximately 1,000 northerners were employed as of September 1983.

The short term employment program (S.T.E.P.) is the Territorial Government's job creation program. Under the supervision of the regions, this program resulted in expenditures of $2 million in the N.W.T. economy at the community level.

The petroleum and mining industries worked with the division in developing methods to train and employ northern labour.

The apprenticeship program continued to develop skilled tradesmen for northern industry through a combination of on-the-job and in-school training. As of September 1983, there were 487 trainees in the designated trades across the Northwest Territories. Of these, approximately 90 were employed by the Territorial Government.

Fifty-seven apprentices completed training and obtaining certification as journeymen. Of these 36 obtained interprovincial qualification under the "red seal" program.

Small engine mechanics and air conditioning training courses were added to the apprenticeship program. A vocational high school program was introduced into the high school system. The first graduates of this program will enter the workforce in 1985.

Tourism and Parks

A five year plan for developing the tourism industry in the Northwest Territories were approved by the Executive Council. A comprehensive guide training program for Northwest Territories guides was also begun.

In direct response to requests from the N.W.T. Travel Industry Association, the 1984 edition of the Explorers' Guide will be published by Outcrop Ltd. of Yellowknife.

Travel Arctic entered into negotiations with Manitoba, Saskatchewan and Alberta to form a new co-operative marketing organization to sell travel programs. Travel Arctic continued to market programs through the Canada West organization and worked closely with the N.W.T. Travel Industry Association and the six tourism zones associations.

The Baffin region held the founding meeting of its zone travel association.

Public Works

Economic Function: General Government Services

Minister's Introduction

On March 1, 1983, Arnold J. McCallum assumed responsibility for the Department of Public Works. Under his direction, the provisions of the northern preference policy were carried out. In the last complete fiscal year, 838 construction contracts with a value of some $21 million were awarded to northern contractors.

The government set a priority on transfer of the highways reconstruction program from the federal government, and also made submissions to his federal counterpart on the federal northern roads policy to ensure the needs of N.W.T. residents were met.

During 1983, the minister directed a review of winter roads to Nahanni Butte and Trout Lake. As a result, winter roads will be constructed in the winter of 1983/84. Contracts for construction have been negotiated with the northern contractors who now have road maintenance contracts in the area. The roads are expected to open in January 1984.

Directorate

The Department of Public Works is responsible for designing, building, operating, and maintaining all buildings and works required by the Government. This includes the operation of ferries, vehicles, heavy construction equipment, and the maintenance and reconstruction of roads and highways.

The directorate includes the senior management of the department and the staff divisions responsible for contracts and capital planning, finance, and policy and planning.

Architecture

A new school at Norman Wells and the restoration of Breynat Hall in Fort Smith were completed in 1983. Contracts for construction in 1984 of new schools in Sanikiluaq, Fort Franklin, Snowdrift, and on the Hay River Reserve were tendered in 1983. The building at Fort Franklin will incorporate a multi-purpose hall for community use.

Planning and construction of community recreation facilities and multi-purpose halls continued. Community halls at Fort Resolution and Cape Dorset were completed in 1983. Construction of community halls at Sachs Harbour and Tuktoyakutuk is underway. Planning for new community halls for Chesterfield Inlet and Repulse Bay which would include hamlet office space and recreation facilities was begun.

A new government computer services building at headquarters neared completion in 1983. Wildlife offices in Coppermine, Arctic Bay and Fort McPherson, and various community facilities in Pangnirtung, Broughton Island, Snowdrift and Chesterfield Inlet were completed.

Engineering

The engineering division ensures the provision of potable water and the disposal of sewage and solid wastes. It is also responsible for the construction of tank farm installations to facilitate the orderly marketing of petroleum products by the Department of Government Services.

During 1983, the division was also concerned with additional facilities for the distribution of natural gas in the Norman Wells area, as well as high temperature heating systems, waste heat recovery systems and central steam plants.

Value of construction projects managed by the division was about $5,600,000.

An extensive program of upgrading water and sewer installations was carried out in Frobisher Bay, along with repair of dykes on the sewage holding pond. Engineering design began for water storage reservoirs in Pangnirtung and Broughton Island. District heating systems in Frobisher Bay and Inuvik were upgraded. The construction of a new community power plant in Sanikiluaq was begun.

Expansion and upgrading of the Tuktoyaktuk fuel storage facility and modification and upgrading of the Pond Inlet fuel storage facility were started. Badly corroded portions of the gasoline pipeline in Whale Cove were replaced. Construction of facilities in Fort Franklin, Lac La Martre, Paulatuk, Coppermine and Gjoa Haven were completed. A fuel testing facility is being established in Yellowknife. The Rankin Inlet airport fuel facility accidently destroyed in 1982, is being re-constructed.

Highways

Two roads maintenance contracts, lasting three years, were negotiated with local contractors in 1983. The Fort McPherson Incorporated Band Ltd. commenced work on 144 kilometers of the Dempster Highway and Beaver Enterprises Ltd. of Fort Liard commenced work on 147 kilometers of the Liard Highway.

In 1983 the Mackenzie River Valley winter road was extended beyond Fort Norman to Norman Wells. Also, in the winter of 1983/84 winter roads into Nahanni Butte and Trout Lake will be opened.

Asphalt surface stabilization was carried out on the road between Rae and Edzo. The Yellowknife Highway and Ingraham Trail at Yellowknife and the Hay River Highway in the town of Hay River were resurfaced.

A major modification to the ferry M.V. Merv Hardie in 1982 enabled the ferry to operate as late as January 17, 1983. This established a new record and no disruption to road traffic during freeze-up for the residents of Yellowknife, Rae-Edzo and Fort Providence resulted.

At the Peel River crossing the cable ferry M.V. Abraham Francis had to be temporarily replaced by a tug and barge ferry arrangement in July and August in order to rectify mechanical deficiencies to the cable ferry. It as subsequently re-installed and continued service to season's end.

Management of more than 70 land development, road construction and drainage projects was undertaken in 40 communities and studies were carried out on several airstrips for the Department of Local Government.

Operations

The operations division comprises three sections: buildings and works, mobile equipment and accommodation services

Maintenance work awarded to local contractors was increased by breaking down contracts for tendering and limiting work performed by DPW staff.

During 1983, telephone fire alarm systems were installed into some western communities. Central heating systems in Inuvik and Frobisher Bay were upgraded for reliability and safety and water and sewer systems in Resolute Bay were improved. A tank farm maintenance upgrading program was started. Work on upgrading the gas line at Norman Wells was begun.

The program to convert vehicles to use propane fuel realized savings of up to 40%. This program will be expanded to most communities where propane fueling facilities are available.

The accommodation services section, in conjunction with the Department of Personnel, finalized the plan for eventual withdrawal from staff housing in Yellowknife, Fort Smith and Hay River. Fourteen houses were sold to employees and negotiations are underway for the sale of 45 more.

Energy Conservation

The energy conservation division addressed the growing need for information on energy conservation techniques, their performance and cost effectiveness. A public information and enquiry service was provided on the products and ways and means of reducing energy costs.

The division has undertaken 24 conservation and renewable energy development and demonstration agreement (CREDDA) projects. A cost-shared program with the federal government, CREDDA was established to encourage the use of renewable energy resources, to conserve energy and make energy use more efficient.

Projects started in 1983 included the upgrading of 62 N.W.T. Housing Corporation units in Rankin Inlet and Cambridge Bay and St. Jude's Parish Hall in Frobisher Bay; heating of the town of Fort Smith's water supply with wood fuel and the construction of 50 super energy-efficient houses in Yellowknife.

Renewable Resources

Economic Function: Economic Development - Other

Minister's Introduction

During 1983, Minister of Renewable Resources Richard Nerysoo encouraged the participation of hunters and trappers in program development and resource management decisions.

The minister announced special financial support for the N.W.T. Hunters and Trappers Federation to protect the trapping industry in the Northwest Territories. Special funding was also provided to the Beaufort and Mackenzie Delta hunters and trappers associations to enable their effective participation in the Beaufort environmental assessment and review process.

The environmental planning and assessment division, under the direction of the Minister, took the lead role in land use planning negotiations with the federal government. The division, in its second year, was also actively involved in a number of other important issues including water management planning and participation in the Beaufort environmental assessment and review public hearings.

Wildlife Management

A management plan for the wood bison herd in the Mackenzie Bison Sanctuary was prepared and released for public review and comment.

A polar bear tagging program continued on the northeast Baffin Island coast and some radio collars were placed on bears in the Beaufort Sea area. Computer modelling sessions involving several government agencies and universities continued to examine the effects of harvest levels.

Assessment of harvest levels and regulations continued in response to new information and requests from user groups. A more complete understanding of resident hunting pressure was obtained from annual questionnaires returned by sport hunters. Progress continues in the development of a system to monitor native harvesting levels through the cooperation of regional native organizations.

Muskox surveys were conducted in the Kitikmeot and Inuvik regions. Most populations appear to be doing well. A workshop on muskoxen, involving computer modelling and review of techniques, led to some revised research objectives which should result in better understanding of muskox ecology and possible levels of harvest.

Extensive gyrfalcon surveys took place in the central and eastern Arctic. A permanent study area was set up to monitor nesting rates and to eventually examine early mortality.

Particular attention was paid to the caribou - the most widely harvested wildlife species in the N.W.T. Unusually high numbers found in 1982 in the Kaminuriak herd were confirmed in 1983. In addition, surveys were conducted on the Bluenose and Wager Bay herds.

The caribou tagging program continued in the Baffin region. Other studies involving habitat, animal condition indicators, and reproductive rates continued in the Keewatin and Fort Smith regions in cooperation with federal and provincial agencies.

A grizzly bear wildlife habitat study was begun in the Beaufort Sea MacKenzie Delta area. This study focused on the development of techniques to define grizzly bear denning habitat. A large-scale mapping program, designed to document the distribution of wildlife species in the Inuvik region began.

The second year of a bear detection and deterrent study was completed. A preliminary training program for wildlife officers was developed and implemented.

A Keewatin caribou monitoring program was undertaken for the fifth consecutive year and a five year review of the program was completed.

In conjunction with the Canadian Wildlife Service, the wildlife management division established a habitat working group. This group is comprised of representatives from both agencies and is designed to facilitate cooperative habitat management efforts in the Northwest Territories.

Environmental Planning and Assessment

The environmental planning and assessment division, is responsible for the department's response to major resource development projects and planning issues as they relate to land and water management.

Activities in 1983 centred on review of renewable resource management issues posed by proposed resource development projects, the largest including a proposed hydro development on the Slave River and the Beaufort Sea/Mackenzie Delta oil and gas development.

The division developed a renewable resource compensation policy for public review which will provide protection, both to the environment and to resource users, from impacts of industrial development.

The division has been primarily responsible for negotiation and development a land use planning program in the Northwest Territories. The northern land use planning program is a joint initiative of the Federal Government through Indian and Northern Affairs and the Government of the Northwest Territories.

The division also provided background work and represented the interests of the government in water management issues, including preparation for interjurisdictional negotiation of agreements for the Mackenzie River Basin.

In response to government priorities, a program was developed to ensure that communities and renewable resource users are informed about proposed resource development projects and issues.

Pollution Control

The goal of the pollution control divisicn is to maintain a high standard of environmental quality. A program of prevention, monitoring and enforcement is designed to enlist the cooperation of industry and the general public.

A joint study was carried out with other government agencies for radionucleides and metals at Port Radium and Rayrock Mine abandoned waste sites. A surface water quality data base to identify the extent of acid deposition in surface waters in the Northwest Territories is also being developed.

Resupply of Lupin and Salmita Mines by winter road began in 1983. A series of fuel spills occurred over a short period of time, due to overturned tanker trucks. The principal causes of the accidents, as well as the short-comings in the spill response program of the operator, were identified and discussed with company officials. Changes introduced as a result of these discussions resulted in a sharp reduction in the number of spills and improvement in the operator's spill response team. The division was instrumental in forming a committee of those involved in the project to review the problems experienced and make recommendations for elimination or reduction of spills.

Permits for use of commercial or restricted pesticides were sought by several communities and individuals in 1983. In addition, domestic insecticide foggers (for use in combatting mosquitoes) were introduced to the Territories and large numbers were purchased by citizens for private use. The situation was monitored and consideration is being given to imposing tighter control on the types of insecticides used.

A more comprehensive environmental protection program was instituted. Wildlife officers acted as pollution control inspectors.

Field Services

Top priority was placed on conservation education, resulting in a series of one-minute television spots, pamphlets, posters and reports (including translations); a National Wildlife Week poster contest, which attracted 1800 entries from across the Northwest Territories; and the publishing of the 1983 edition of a national publication, Canadian Wildlife Administration. Work on a trappers manual, scheduled for publication in 1984, was begun. The department's firearm safety program continued with the production of a student manual.

The field services division is also charged with developing the renewable resource economy. Assistance programs which support close native ties with wildlife are administered. Seventy-nine applications for funding under the outpost-camp program were approved and assistance was given to approximately 1200 persons who desired to gain a living on the land.

During the 1982/83 fur season, 3,167 trappers sold furs valued at $2,794,711.

Several regulation changes were initiated in response to requests from the public.

Energy, Mines and Resources

Economic Function: Economic Development - Other

The Energy, Mines and Resources Secretariat provides advice to the Minister, Mr. Nerysoo and to the Executive Council on policies for energy, mines and resource development and is functionally responsible for formulating strategies and policies.

The secretariat manages and directs the preparation of government positions and reviews programs, focussing on their effectiveness in meeting government objectives. In respect to resource development, it assesses the effectiveness of legislation and existing organizational structures and recommends changes if required.

Considerable attention was paid to the Beaufort Sea hydrocarbon production and transportation proposal. In February 1983, the Minister presented on behalf of the Executive Council the Territorial Government's environmental impact statement deficiency report, which listed a number of major socio-economic and environmental areas requiring supplementary information from industry.

A ten-year incremental plan for expansion of the venue of the N.W.T. Public Utilities Board was developed and, subsequently, approved by the Executive Council. The plan recommended that the utility board be given powers associated with general utility supervision, licensing and facility planning. Also, an energy planning commission would be created and charged with assessing the long-term benefits of alternative energy options.

Appearing before the National Energy Board inquiry into the operations of the Northern Canada Power Commission, the minister stated that the Territorial Government's goal was to establish an electrical power utility financially and administratively well founded, responsive and prepared to meet the challenges of tomorrow.

A number of policy-related steps were taken during 1983 since the promulgation of the resource development policy in October of 1982. Mr. Nerysoo made available some $370,000 for the funding of Development Impact Zone (DIZ) groups. The Slave River Development Impact Zone Society, incorporated under the N.W.T. Societies Ordinance in June, was given approximately $14,000 to operate for the remainder of the year. The Beaufort Sea/Mackenzie Delta Development Impact Zone Society, incorporated in July, was given $135,500 by the minister and $10,000 each by Esso Resources and Dome Petroleum. The money will be used for wages, office rentals, administration supplies, and to pay for specific work plan requirements.

The Executive Council did not support Gulf Canada Resources' application to establish an exploration base at Stokes Point, Yukon. Instead, it requested that McKinley Bay be considered for such a base because N.W.T. residents would be provided greater business and employment benefits. It recommended that the federal government centralize harbour development. The establishment of an exploration base on the N.W.T. coast line in the Beaufort, particularly at McKinley Bay, would allow the utilization of an established facility on a temporary basis. In turn, the three governments could then work out a long term solution to harbour development on the coastline.

The minister and the Executive Council approved research and planning strategies and priorities under the Northern Oil and Gas Action Program (NOGAP) for a seven year period, 1984-1991. NOGAP is a federal research and planning program administered by the Department of Indian and Northern Affairs. Territorial Government submissions must be reviewed, supported and approved by Indian and Northern Affairs and federal control agencies. The minister expected a decision to be made on the Territorial Government's submission by the end of 1983.

Mr. Nerysoo attended a provincial mines ministers conference and the meeting of the council of provincial energy ministers in Regina during September. Provincial ministers agreed to hold the 1984 conference of mines ministers in Yellowknife with the Government of the N.W.T. as host and chair for the conference. Also, the minister will chair the 1984 meeting of the council of provincial energy ministers.

Mr. Nerysoo concluded an agreement with the Honourable Jean Chretien which would see both Canada and the Government of the N.W.T. funding a $125,000 N.W.T. natural gas and propane study. Communities to be considered include Fort Smith, Fort Resolution, Pine Point, Enterprise, hay River, Rae-Edzo, Detah and yellowknife in the Great Slave Lake area; and Inuvik, Tuktoyaktuk, Fort McPherson and Arctic Red River in the Mackenzie Delta area. The study calls for an estimate of the market potential and comparative economics of natural gas and propane in these communities for residential, commercial, industrial, transportation, mining and electrical generation sectors. A second objective of the study is to estimate the related capital, operating and maintenance costs of such service.

Resources

The Northern Affairs Program of the Department of Indian Affairs and Northern Development plays a role in the management of resources in the Northwest Territories and administers such legislation as the Territorial Lands Act, Arctic Waters Pollution Prevention Act, Northern Inland Waters Act and the Oil and Gas Production and Conservation Act.

Mineral Exploration

Mineral exploration activity for 1983 was comparable to 1982. One hundred and one projects were identified by mid-September compared with a total of 125 for 1982. Forty were high cost projects, six mine development and 34 involved diamond drilling compared to five and 45 respectively for the previous year.

To the end of 1983, 420 mineral claims covering 270,000 hectares in the N.W.T. were recorded. A total of 42,030 mineral claims covering an area of 3,204,000 hectares remained in good standing at the end of 1983.

Renewable Resources

Land Resources

Activity in the Beaufort Sea remained at a level comparable to 1982. During 1983, 15 approvals were issued for offshore island construction and dredging. Approximately 200 land use permits were issued compared to 210 in 1981 and 154 in 1982. The increase can be attributed to activities of oil and gas exploration in the western area of the N.W.T. The number of land leases issued in 1983 was 145 compared to 127 in 1981 and 99 in 1982.

Permits required for the construction of the N.W.T. portion of the Norman Wells/Zama pipeline were issued and it is expected that all land tenure agreements for the pipeline facilities and the Norman Wells expansion program will be finalized in early 1984.

Late in 1983, the production of a land use guidelines handbook for access roads and trails was undertaken and publication was targetted for mid-1984. Granular resource management continued to be a major point of interest.

Water Resources

In 1983, 182 water authorizations were issued for short term projects (up to 270 days duration), requiring relatively small amounts of water (up to 50,000 gallons per day).

In 1983, nine licences were issued and 12 public hearings were held throughout the N.W.T.

In 1983, the federal lab analyzed 2,3000 samples and performed 33,000 tests to support monitoring and inspection functions generated by water licences and authorizations.

The division, through its participation in various working groups, engaged in long term study programs to assess the biological resources and sensitivity of the ecosystem to changes in the hydrological regime.

Forest Resources

The Liard management unit inventory report is under review. The inventory data for the Trout and Slave management unit are being reviewed on and generalized reports on these units should be drafted within the next year.

Three short reports were prepared upon completion of field measurements during the summer of 1983. The first report, "Assessment of Wood Chips for IPL Slope Stabilization", was an assessment of available chipwood volumes from selected sites along the proposed Norman Wells Pipeline route. The second report was an assessment of the fuelwood potential in the Mosquito Creek area and a suggested development plan was prepared. The third report assessed the fuelwood potential in the Fort Smith area and a report was prepared for district, town and band use. The town of Fort Smith is converting a heating unit at their water plant to use wood.

Lumber production decreased. Fuelwood increases were due mainly to increased commercial demand.

Forest Fire Management

During the 1983 fire season, a total of 333 wildfires were reported: 208 in fire action zones and 125 in observation zones. A total of 289,653 hectares burned, including the 29,668 hectares burned in fire attack zones, costing $6.5 million for fire suppression activities.

Most fire activity occurred in the Mackenzie River Valley. Double the normal number of fies were reported in that area. Yellowknife and the Great Slave areas reported only one-half the normal incidence.

Northern Benefits Committee

In August 1983, the Minister of Indian and Northern Affairs announced the signing of 19 exploration agreements and the formation of a regionally based northern benefits committee. The committee will review the action plans submitted by industry in support of their work program commitments in exploration agreements and provide for the integration of both federal and territorial regional, social and economic objectives within the northern benefits component, ensuring maximum benefits accrue to northerners.

Economic Function: Education

Minister's Introduction

Minister of Education Dennis Patterson travelled extensively throughout the Northwest Territories and continued to work closely with local education authorities on the on-going changes required within the education system.

In September the Legislative Assembly made major changes to the Education Ordinance. An amendment to establish education divisions and to create divisional boards of education and community education councils was approved. The formation of education divisions will not be mandatory; local education authorities must submit a petition requesting that a division be formed and that a divisional board of education be established. The amendment was recommended by the Special Committee on Education and was identified as the top priority by the task force on implementation of the special committee's report.

During 1983 policy guidelines were developed for determining the school calendar. In the future - if attendance levels are satisfactory - it will be possible have less than 190 in-school sessional days. This will make it possible to recognize traditional family seasonal activities and will enable students to participate in them. Such a provision must be proposed by the local education authority and will require the approval of the Minister of Education.

Major emphasis for in-school program development in 1983 was placed on bilingual education and high school vocational programs.

About $1,000,000 was spent to support the development of bilingual education programs in 35 communities. The program featured the involvement of local residents as resource people in the developmental process. Projects are underway in all the major Dene languages and additional publications have been produced in all indigenous languages.

A teacher's guide book and lesson units were developed for English as a second language/dialect programs. This program developed over the last few years, will address the special needs of the majority of students in the N.W.T. who come to school with English as a second language.

An Inuktitut curriculum for grades 2-6 was completed by a committee of Inuit teachers representing three regions. A grade 2 program has already been started in the schools and programs for grades 3-6 should be completed by the end of the 1983-84 school year.

The development of Northwest Territories high school programs was a major priority during the past year. In March, the Minister of Education authorized the issuing of a Northwest Territories high school graduation certificate. The certificate will be granted to N.W.T. students who meet N.W.T. graduation requirements.

Grade 12 students will be required to write Alberta provincial high school diploma examinations beginning in the 1983-84 school year. Because N.W.T. high schools follow the Alberta program of studies and credits are awarded by the province, Territorial students must write the examinations to qualify for an Alberta diploma.

A new community-based occupation program, was started in Baker Lake, Edzo and Yellowknife. The goal of the program is to prepare people to find employment in their own communities.

There were dramatic increases in the number of students enrolled in the Eastern Arctic teacher education program. Over 100 people are being trained in either the field-based program or on campus in Frobisher Bay with generous assistance from the Donner Foundation of Canada.

Generally it was a good year for education in the Northwest Territories. Record numbers of students, particularly native students, were accepted at post secondary institutions. School attendance improved, aided by the efforts of local and regional education authorities. A new decentralized college system is being actively planned by the Thebacha board of governors. Divisional boards, a new level of education authority, will permit remote communities to exert more control over their schools. There is revived interest in increased use of native languages.

Program Services

The program services division concentrated on the extensive support given to bilingual education and enhancement of high school vocational programs.

The division provided extensive support work on the development of the N.W.T. high school graduation certificate program.

In September 1983, several more vocational programs designed by the Department of Education were implemented in three N.W.T. high schools. Vocational program development will continue over the next few years and a high priority will be attached to the development of N.W.T. academic programs. These programs will be designed to meet the special needs of N.W.T. pupils.

As with high schools in southern Canada, N.W.T. high schools receive a number of pupils who are not able to cope with the programs required for graduation. In the past these students usually became drop-outs. In order to meet the needs of these pupils, the department began designing community occupational programs. Certain aspects of these programs vary from one community to another, but other aspects such as life skills are common to all.

In response to the Territorial Assembly, the Department of Education began developing special drug and alcohol programs for N.W.T. schools in cooperation with the Departments of Health and Social Services. Native groups and other agencies concerned with these problem areas will be included in the process. As much as possible, a community approach will be used in the design of the programs.

$100,000 was provided to high schools for the purchase of micro-computers.

Contracts were let to develop native language capabilities in micro-computers. An Inuktitut modification is now available that will permit computer assisted introduction with an Inuktitut display on the TRS 80C Model III, as well as word processing in Inuktitut. A similar modification is also available for the Slavey language.

In 1983, the federal Department of Communications turned over to the Department of Education eight satellite receiver dishes, previously used for Anik "B" experiments. Some of these dishes will be used to receive educational programs from the Knowledge Network in British Columbia.

Adult Vocational Training Programs

The Territorial Government decided in June 1983, to consolidate training activities within the Department of Education. This change will involve the transfer of resources from other government departments. The assistant deputy minister in charge of this area was also given the mandate to respond to special training needs generated by resource development activity.

Thebacha College continued its progress towards full accreditation with the addition of a campus in Frobisher Bay. The board of governors of Thebacha College were provided with the terms of reference they required to play a more meaningful role in determining the college's direction. Their major accomplishment during the year was the submission of a strategic plan to guide the college through the first years of operation.

The second year of the public and business administration and social services diploma programs were successfully implemented. The college also developed an academic studies college preparation program to upgrade students who were not academically prepared to enter the diploma courses.

The College offered, through extension programs, over 60 courses including English language training, driver training, cooking, welding and basic office procedures.

Finance and Administration

The Department of Education's operating budget for the 1983-84 fiscal year was $72,104,000. This O and M was broken down into six major activities: administration - $9,990,000; college programs - $6,862,000; residences - $4,195,000.

In addition to O and M funding, the Department of Education also received $11,723,000 in capital funds.

Construction Program

Restoration of Breynat Hall, the male residence at Thebacha College, Fort Smith, was completed early in 1983 after severe fire and water damage. The new Norman Wells school was completed. The new Clyde River school is expected to be completed in March of 1984.

A grant to the separate school board in Yellowknife resulted in a four classroom addition to St. Joseph's School.

Projects to be tendered in 1983 include new schools in Fort Franklin, Hay River Reserve, Sanikiluaq and Snowdrift. Preliminary design work for new schools in Fort Liard, Snare Lake, Holman Island, Arctic Bay and Resolute Bay is underway.

Extra classroom units were constructed in Lake Harbour, Chesterfield Inlet, Baker lake, Eskimo Point, Spence Bay and Coppermine.

The Samuel Hearne Secondary School was expended to accommodate the vocational certificate program. An automotives shop was opened in 1982 and a carpentry shop in 1983. The general mechanics shop will be completed in 1984.

The upgrading of Akaitcho Hall student residence in Yellowknife and Grollier Hall senior student residence in Inuvik is continuing.

Higher Education

The trend in the enrolment of post-secondary program of studies has been on the rise since the new Student Financial Assistance Ordinance came into effect in July, 1982. School year 1982-83 saw enrolment increase by 25%. At the July 1983 meeting of the student grants and bursaires board, over 650 applications to post-secondary program of studies were appraised by the board. This represented an increase of 50% over the previous school year.

Information

Minister's Introduction

Economic Function: General Government Services

The Hon. Dennis Patterson was the first elected executive member to assume responsibility for the Department of Information in March of 1983. The department formerly reported to Commissioner John Parker.

One of the minister's first concerns was directed towards implementation of an active information program responsive to the communication needs of northern residents, regardless of language.

In addition, he gained the support of his colleagues for extension of the department's northern satellite communications program into all communities with a population less than 150 people. The program change allowed for establishment of television and radio services at Grise Fiord, Canada's most northerly community, and at Arctic Red River in the western Territories during 1983, with facilities scheduled for Jean Marie River and Nahanni Butte in 1984.

During the year, the department's newly-formed language bureau strengthened its foundation with the hiring of Athapaskan and Inuktitut linguists and a number of co-ordinating meetings were held with the Department of Education to ensure compatibility of programs and to guard against overlap.

Grant monies were provided to the Native Communications Society of the Northwest Territories for the purchase of new typesetting equipment with an Athapaskan language capability. A contract was arranged with the Roaring Rapids Friendship Centre in Fort Smith to assist in the production of native language video tape programs for use on the local cable television station and a joint publishing venture was struck with the Kitikmeot Inuit Association to produce an Inuinnaqtun training manual.

In addition, interpreting services were provided to the Inuit Circumpolar Conference in Frobisher Bay, various regional councils and the Nunavut Constitutional Forum.

Language Bureau

The department's language bureau provides interpreting, translating and public information services to the departments and agencies of the Territorial Government in English and all native languages: Inuktitut, Chipewyan, Dogrib, Loucheux, South Slavey and North Slavey.

The bureau's interpreting and translation services are also available to native individuals or groups wishing to communicate with the government in their own languages.

The first few months of 1983 saw completion of a preliminary training program for the newly established Dene languages section. The six-month training program provided an entry point to the bureau's long-term, competency-based training program.

Following the initial training period, Dene interpreter-communicators conducted a survey on information needs and basic language skills in 18 Dene communities.

The Inuktitut section continued to provide interpreting/translating services to the Legislative Assembly, government departments and regional councils based in the Arctic areas, and provided a core group of interpreters for the Inuit Circumpolar Conference and for meetings of the Nunavut Constitutional Forum.

For the first time members of the Dene languages section provided simultaneous interpreting services to meetings of the Deh Cho Regional Council in South Slavey and the Dene National Assembly in Slavey, Dogrib and Chipewyan.

Northern Communications Program

During 1983, the communities of Grise Fiord and Arctic Red River acquired satellite-delivered television and radio service through the department's northern communications program.

Since the communications program began in 1978, twenty-two communities with populations less than 500 have been provided with radio and television service. Communities with population over 500 are directly served by the CBC.

The Department of Information also continues to encourage the development of local radio stations which provide a valuable communication role in communities. The vast majority of programming on community radio stations is in native languages. Where the department has installed satellite equipment, local radio societies are given the opportunity to tie their own radio station into the available radio transmitter. This has occurred in 15 of the 22 communities served. An additional 15 communities either have local access to CBC installations or completely independent community radio outlets. The department's community radio grant program assists local radio stations with operating costs.

Public Affairs

During the year, public affairs officers prepared over 300 releases and numerous public service announcements for radio and television, along with brochures, posters and pamphlets.

Administratively, the branch undertook a review of its Inuvik office and entered into an arrangement with the Native Women's Association of the Northwest Territories to provide a storefront information centre for the Mackenzie Delta region. The centre, managed by the association in Inuvik, will provide both government and association information for public distribution.

The audio-visual unit designed and established a videeo production system and a training schedule to teach Dene interpreter-communicators how to use the medium themselves to communicate in their own languages to Dene residents of the North.

Production of eight tapes is currently underway. Unit staff has completed a tape on the Athapaskan Language Centre and the use of Dene languages, and a second on the government's new resource development policy.

In 1984, the unit will implement a program to place audio-visual delivery systems in Dene communities.

Publications and Production

Publication production reflected the increased pace of political evolution in the Northwest Territories and the expansion of ministerial government.

A report was produced and widely distributed on the First Ministers' Conference on Aboriginal Rights and the Constitution.

Several reports and brochures were produced in conjunction with the constitutional forums including "Nunavut: History of an Idea" and "Building Nunavut" for the Nunavut Constitutional Forum. A report was published on the Ninth Legislative Assembly of the Northwest Territories.

The Bird Report on the Taxation of Northern Allowances was published.

The department also co-ordinated the production of "Education Focus". A newsletter was published for the Minister of Energy, Mines and Resources to inform the public on matters related to resource development policy and the operations of the Energy, Mines and Resources Secretariat.

Social Services

Economic Function: Welfare

Minister's Introduction

During 1983, Minister of Social Services Kane Tologanak worked to improve delivery of social services. Emphasis was placed on the need for participation of communities in the entire spectrum of services. Priority was placed on developing northerners' capacity for self-help, through education and community support services.

The department aims to keep people, as much as possible, within their own familiar environment through the provision of services within the community and to implement preventive, rather than remedial programs.

A marked increase of suicides was noted. In order to combat this trend the department, working closely with Health and Welfare Canada, undertook the provision of community education and training, as well as ongoing support services.

The trend towards increasing community responsibility saw further delegation of responsibility for social services to local levels, encouragement of community committees and continuing dialogue with those communities working towards devolution.

Concern for the aged and the handicapped citizens was shown by planning for and establishing of appropriate facilities. An acceptable legislative base for the establishment of adequate protective services for aged and handicapped citizens was subject.

Staff training personnel continued to foster greater awareness in departmental staff through cross-cultural training and upgrading workshops in child welfare, alcohol and drug problems, corrections services, as well as counselling skills and delivery of statutory services. Several graduates from community college programs and universities returned to the North and resumed their activities as community social service workers.

In addition to its support role to program divisions, the policy and planning section played a major part in the review and assessment of resource development activities in the North.

The department's primary focus will continue to be the maintenance of cultural values, along with the fostering of an attitude of self-help in northern families and communities and the maintenance of a healthy, adaptive life style.

Aged and Handicapped

The year was marked by increased emphasis on providing services to elderly people.

The provision of home support programs by local groups in communities was stressed. Work commenced on the development of a senior citizen's facility in Rae Edzo (in conjunction with the Housing Corporation). A home for the elderly was opened in Yellowknife.

The Frobisher Bay foster home for profoundly handicapped children was moved into the town. In cooperation with the Department of Education a special class for handicapped children was started in Nakasuk School.

A comprehensive program for visually impaired people in Rae Edzo was undertaken, with the Canadian National Institute for the Blind working in close conjunction with community groups.

The department cooperated with other health and social services agencies to sponsor a major conference on hearing impairment in Frobisher Bay.

Alcohol and Drug Program

The Department of Social Services placed a high priority on the treatment, rehabilitation and prevention aspects of alcohol and drug abuse. This was co-ordinated by the staff of the alcohol and drug program, working closely with the alcohol and drug coordinating council.

Programs funded by the government ranged from residential treatment programs at Delta House and Northern Adiction Services, and to related community programs.

A significant drop in the age of those seeking assistance for drug and alcohol problems was noted.

In keeping with Executive Council direction, training continued as a priority. In 1983, two major training events took place. The first was the delivery of a 10 day training set on core knowledge to five regions of the N.W.T. The second was the establishment of an agreement between the Territorial Government and Health and Welfare Canada to develop a two year training program for all addiction workers in the N.W.T.

The department continued to emphasize the role of community groups in the delivery of services to the addicted person.

Financial Assistance Services

Social Services led in the establishment of an inter-departmental "economic options" committee to review the extent of social assistance and government grants relating to the income of hunters and trappers and the able-bodied unemployed.

Financial assistance expenditures increased by 17% to $8,742,000 of which 18% went to disabled or sick individuals and 17% to single parents with young children. Eleven hundred senior citizens received the monthly senior citizens benefit of $75.

Corrections

Overcrowding in corrections facilities and a high rate of imprisonment continued to be a concern in 1983. The fine options program should help to eliminate some of the overcrowding. The construction of a 24-man trailer unit at the Yellowknife Correctional Centre took some pressure off the main institution.

Community work programs doubled, with inmates working on small projects such as cleaning golf courses, fence construction, clearing of sidewalks, cutting firewood and power poles along the Mackenzie Highway, area cleanups, fishing programs and building of coffins at Baffin Correctional Centre.

The northern correctional officer trainee program has been developing successfully. Thirty-four percent of the first level correctional officers at Yellowknife Correctional Centre and South Mackenzie Correctional Centre are long-term northerners.

Family and Children's Services

Training of child care workers and modification of facilities resulted in significant improvement in services. Reorganization of treatment facilities led to the development of Northern Lights in Inuvik, providing group home treatment and family crisis services, and Trail-cross and River Ridge in Fort Smith, providing assessment and treatment services for adolescents. Greater emphasis was placed on providing services to troubled families so that children can more frequently be maintained in their own homes and the family unit retained.

With proclamation of the Young Offenders Act scheduled for April 1984, planning for the implementation of this legislation was a major task in 1983.

The summer camp program was enhanced, and it proving highly successful in preventing young people from coming into conflict with the law during their vacation period. The program is also to be extended into the winter season.

Health

Economic Function: Health

Minister's Introduction

Under the direction of the Honourable Kane Tologanak, Minister of Health, the department was involved in several new activities during 1983. These included:

- The Medical Professions Ordinance, passed in the February session of the Legislature, brought into line the rules governing the granting of licenses and permits to practice medicine in the N.W.T.

- The Medical Care Ordinance was amended to strengthen the audit and collection procedures of the act with respect to physician billings.

- The Territorial Hospital Insurance Services Ordinance, the Public Health Ordinance and the Mental Health Ordinance are under revision.

- A cooperative study with the health protection branch of Health and Welfare Canada into smoking habits and tobacco use among N.W.T. students was begun.

- Program responsibility for chronic and extended care and nursing home care was transferred from the Department of Social Services to the Department of Health. Community assessments were begun to devise long-range strategies for the health care of the elderly.

- Health services to the community of Tungsten will now be provided by the Government of the N.W.T. through an arrangement with Health and Welfare Canada.

Health Information and Promotion

Under the direction of the Department of Information, the health information and promotion section began production of a series of radio and television spots which will provide information on both traditional and modern health care.

The Rae-Edzo Health Committee is in its fourth year of funding. Well-baby and prenatal classes in the community are now better attended, and there is an improvement in compliance with T.B. chemoprophylaxis.

A summary of the smoking level report is being translated intc Inuktitut for use in the N.W.T., and copies in both English and French are available from the health resource centre.

Under the school health program, funded in 1983 by Health and Welfare Canada, the development of a school health curriculum guide was begun. A program coordinator and a researcher/writer were hired in August 1983 and a community health education committee and a professional advisory committee were formed.

Northern Rural Health Program

The Territorial Government continues to administer a contract with Health and Welfare Canada for the provision of physicians. Thirteen physicians are employed in various N.W.T. communities.

Training

The Department of Health continued to fund training for persons pursuing careers in health services. Six students were awarded bursaries in 1983.

The program helps to alleviate health manpower shortages in the North and encourages health workers to obtain additional skills.

Insured Services

The no premium health care plan provides medical care and hospital insurance to eligible N.W.T. residents.

The department administered a broad range of insured services including medical care, hospital care, pharmacare, medical travel and other supplementary benefits. The hospital insurance benefit covers detoxification services provided by an approved provincial or territorial centre.

Fort Smith Health Centre

The Fort Smith Health Centre is a modern, accredited health care facility operated through a local board of management providing in-patient care (15 beds), extended/chronic care (10 beds), out-patient and emergency services, home care, physiotherapy, public health, social services and doctors' offices for visiting specialists.

Specialists and consultant services are provided on a regular basis by the Stanton Yellowknife Hospital.

H.H. Williams Memorial Hospital

H.H. Williams Memorial Hospital, a modern accredited health centre operated for the government by the Pentecoastal Assemblies of Canada, serves residents from the southern Great Slave area, particularly the communities of Hay River, Pine Point, Fort Resolution, Enterprise and Fort Providence.

The facility provides in-patient and emergency services, home care, public and environmental health, social services and offices for visiting medical specialists.

Specialist and consultant services are available on a regular basis from Stanton Yellowknife Hospital. Physician services are provided through the Hay River Medical Clinic.

Stanton Yellowknife Hospital

Stanton Yellowknife Hospital, a modern accredited 72 bed acute care hospital, is operated through a board of management and provides a wide variety of in-patient services.

The hospital has on staff medical specialists in the areas of orthopedics, otorhinolaryngology (ENT), obstetrics/gynecology, opthalmology, internal medicine, and psychiatry. Through a contract with the federal medical services branch, these specialists regularly visit major communities in the Western Arctic.

The hospital provides occupational therapy, physiotherapy, audiology and speech therapy programs.

A psychiatric program serves Yellowknife and major centres in the Fort Smith and Kitikmeot regions.

Planning is under way for construction of a new facility in Yellowknife.

Baffin Regional Hospital

The Baffin Regional Hospital, a 35 bed accredited hospital services the health needs of all Baffin region communities.

Specialists and consultant services are provided on a regular basis through a contract arrangement with McGill University of Montreal and from the Stanton Yellowknife Hospital

Detoxication

The Yellowknife Detoxication Unit, administered by the Northern Addiction Services, serves residents of the Western Arctic.

Medical Care Plan

The Medical Care Plan provides payment for insured services at 100% of the approved fee schedule of the province/territory within Canada in which the service was rendered. All persons registered under the N.W.T. Health Care Plan are eligible for benefits under Medicare.

The plan covers all medically required services rendered by physicians in the office, clinic, hospital and home, as well as certain surgical-dental procedures medically required to be performed in a hospital. Surgical procedures, anaesthetic services and complete maternity care are also provided.

Territorial Hospital Insurance Services

The N.W.T. Hospital Insurance Plan is administered under the direction of the Territorial Hospital Insurance Services Board.

The Plan provides coverage for a broad range of patient and out-patient services.

The Frobisher Bay Hospital and its funding was transferred to Government of the N.W.T.

During the fiscal year, the program responsibility and funding for extended and chronic care was transferred from the Department of Social Services.

Medical Care Expenditures

	1982/83		1981/82	
	$	%	$	%
N.W.T. Doctors	5,388,000	74.2	4,010,000	78.2
Out of Territories Doctors				
Alberta	1,078,000	14.8	640,000	12.5
Manitoba	285,000	3.9	177,000	3.4
British Columbia	116,000	1.6	67,000	1.3
Quebec	108,000	1.5	69,000	1.3
Ontario	196,000	2.7	112,000	2.2
Saskatchewan	26,000	0.4	19,000	0.4
Yukon	25,000	0.3	12,000	0.5
Other	44,000	0.6	24,000	0.5
Subtotal Out of Territories Doctors	1,878,000	25.8	1,120,000	21.8
Total Payments	7,266,000	100.0	5,130,000	100.0

T.H.I.S. Expenditures

	1982/83		1981/82	
	$	%	$	%
N.W.T. Hospitals				
Federal Hospital	5,180,000	16.4	3,907,000	18.8
Budget Review Hospitals	13,093,000	41.6	10,458,000	50.5
Reciprocal Billings (In-patients)	318,000	1.0		
Subtotal N.W.T. Hospital	18,591,000	59.0	14,365,000	69.3

	1982/83		1981/82	
	$	%	$	%
Out of Territories Hospital Payments				
Yukon	31,000	0.1	30,000	0.1
British Columbia	196,000	0.6	126,000	0.6
Alberta	5,409,000	17.2	2,923,000	14.0
Saskatchewan	37,000	0.1	32,000	0.2
Manitoba	3,053,000	9.7	2,062,000	9.9
Ontario	518,000	1.7	308,000	1.5
Quebec	2,151,000	6.8	856,000	4.1
Maritimes	51,000	0.2	35,000	0.2
Foreign	346,000	1.1	5,000	0.1
Subtotal	11,792,000	37.5	6,377,000	30.7
Extended and Chronic Care	1,115,000	3.5	—	—
Total Payments	31,498,000	100.0	20,742,000	100.0

Uninsured Services

Certain non-insured services which are beyond the scope of the N.W.T. Health Care Plan are covered by extended medical benefits, pharmacare and medical transportation programs.

Extended medical benefits provide financial assistance to "other" status residents with certain long-term disease conditions. Pharmacare provides for payment of approved prescription drugs listed in the N.W.T. pharmacare formulary for senior citizens and "other" status residents who are eligible under the extended medical benefits. Similar non-insured services are provided to Treaty Indian/Inuit residents by medical services, Health and Welfare Canada, who establish the terms and conditions under which their programs are administered.

A policy on medical transportation, approved by Executive Council, describes the categories of patients eligible for benefits under Department of Health programs.

The Department of Health jointly funds with the Department of Social Services, co-ordinated home care programs in Yellowknife, Hay River and Fort Smith. These services are provided by federal nurses in the smaller settlements.

Federal Health Services

The Federal and Territorial Governments cooperate in the promotion and maintenance of a healthy environment and the provision of both public health and treatment services. The Department of National Health and Welfare through its Medical Services Branch assists the Territorial Government in the administration of health ordinances and operates health facilities in the Territories.

Causes of Death During 1982

Cause of Death	Number of Deaths	% of Total Deaths
Infectious and Parasitic Disease	4	1.7
Neoplasms	42	18.2
Endocrine, Nutritional and Metabolic Diseases	1	0.4
Mental Disorders	8	3.5
Nervous System and Sense Organs	2	0.9
Disease of the Circulatory System	48	20.9
Disease of the Respiratory System	17	7.4
Disease of the Digestive System	2	0.9
Disease of the Genitourinary System	3	1.3
Congenital Anomalies	5	2.2
Conditions Originating in Prenatal Period	6	2.6
Symptoms, Signs and Ill-defined Conditions	21	9.1
Injury and Poisoning	71	30.9
Total	230	100.0

Health Statistics

In 1982, community health nurses in the field saw 81,145 patients and performed 184,987 services throughout the Northwest Territories.

The birthrate for 1982 was 27.1 per thousand (1000) population. No maternal deaths was recorded.

There were 230 recorded deaths in the Northwest Territories. This gives an overall crude death rate (i.e. total deaths per 1000 population) of 4.9.

The infant mortality rate (death under one year of age per 1000 live births) was 15.7. This rate is lower than previous years.

Accidents, injury and violence caused the highest percentage of death with motor vehicle, drowning, fire, firearms, overdoes, suicides, exposure, stabbing, and industrial accidents the leaders of the group, in that order. Tuberculosis incidence is 72.4 per 1,000,000 population. A total of 34 cases of new, active and reactivated cases of tuberculosis were detected in 1982 out of a mid-year population of 47,053.

Local Government

Economic Function: Local Government

Minister's Introduction

1983 was James Wah-Shee's fourth year as the Minister of Local Government. During the year, the minister travelled extensively throughout the Northwest Territories and the rest of Canada in connection with such diverse responsibilities as the community airports program, sport, recreation, culture and municipal affairs.

The importance of culture in the North was recognized by Mr. Wah-Shee's appointment as Minister of Culture, and the appointment of Rene Lamothe to prepare a report for the Executive Council. As a result of the report, a senior advisor on culture was appointed to further develop a policy on culture for the Executive Council and to support the work of the Dene and Inuit Councils of Elders. The possibility of eventually bringing together in one ministry, responsibility for all Territorial Government programs in support of heritage and culture, is being examined.

The Regional and Tribal Councils Ordinance was assented to by the Ninth Assembly. The Ordinance provides for five councils to be incorporated immediately: the Baffin Regional Council (which had previously existed under its own ordinance passed in 1980), the Keewatin Regional Council, the Kitikmeot Regional Council, the Deh-Cho Regional Council and the Dogrib Tribal Council. Other councils are forming in Great Bear and South Great Slave areas which may also be incorporated under this ordinance.

A discussion paper "Design for Devolution" which set out ideas for a comprehensive local government ordinance was published. The proposed ordinance is intended to replace the Municipal Ordinance.

In developing a new Local Government Ordinance, the minister consulted widely with representatives from all levels of communities and with the Dene Nation. Some of the major issues included the relationship of community governments and band councils, involvement of community and municipal councils in economic development activities; reforms in municipal financing and taxation; increased authority for municipal councils in land use planning and zoning; and improved representation for aboriginal residents in urban municipalities.

The minister introduced changes to the land pricing policy in 1983 in response to complaints that moves towards home ownership were being thwarted by the high price of developed lots. The Territorial Government now has a policy which ensures that land outside the tax-based municipalities will be available to individuals at a reasonable price. Further assistance to private homeowners came in the form of an increase in the annual homeowner's tax rebate from $300 to $400.

In 1983 the first recreation facilities were constructed under a new policy sponsored by the minister. Community halls were completed at Cape Dorset and Fort Resolution during the year, and projects to provide community or multi-purpose halls were approved or are underway in 20 communities. Annual capital expenditures on recreation facilities are running at $3.5 to $4 million. The new policy also provided for assistance in the cost of operating and maintaining recreation facilities; 1.4 million dollars were distributed to communities under this program in 1983.

Direction and Objectives

The trend in the Department of Local Government in 1983 was towards a less centralized organization - regions self-sufficient in personnel and funds, and better able to respond to the needs of local governments. This was particularly true in the areas of community planning and capital programming. Managerial responsibility for these functions now rests with regional superintendents.

Considerable effort went into assisting regional and tribal councils in 1983. The five already incorporated, and others now forming, will be an important source of advice and direction for regional staffs.

The objective of the department is to provide service and support to communities. Transfer payments to local governments in the form of grants, contributions and subsidies make up about two thirds of the $33.5 million appropriated to the department for 1983/84 operations and maintenance purposes. As well, more than $3 million additionally will be spent delivering municipal services directly and providing community-based administrative support to unincorporated settlements. Financial assistance totalling over $500,000 was provided to assist the five incorporated regional and tribal councils.

Regions participated more than ever before in planning and implementing the department's capital programs. More than three quarters of the $22 million capital appropriation for 1983/84 is being administered through regional offices. This less central approach to project management will strengthen the department's capability to respond to the many factors which can affect capital infrastructure development.

The department concluded negotiations with the federal government and agreed to a property assessment value for national parks and D.E.W. line sites. A total of $4.7 million (including retroactive payments to 1980) will be added to the department's 1983/83 property tax revenue estimate of $2.3 million. Future years will see tax revenue increased by $1.7 million as a result of this agreement.

Community Planning and Development

With the decentralization of activities to regional offices, the division was appropriately reorganized. Following the consolidation of almost all departmental capital into this division, regional capital budgets and some planning and engineering positions were transferred to the regions.

Major community planning activities took place in several communities.

Water and sanitation construction projects were carried out in Fort Smith, Frobisher Bay, Pine Point and Yellowknife, with financial contributions from the department.

Land and Assessment

A sole vendor agreement for the administration and management of Commissioner's Land within municipalities was signed with the town of Fort Smith. Agreements are being negotiated with the towns of Hay River, Inuvik and Frobisher Bay.

The division sponsored a ten day training course for municipal and governmental land administrators.

The communities of Coppermine, Fort Franklin, Fort Norman, Paulatuk and Arctic Red River were added to the 1983 assessment roll under the Taxation Ordinance for the 1984 taxation year. General re-assessment for the city of Yellowknife and village of Fort Simpson were completed under the Municipal Ordinance for the 1984 taxation year.

The artifical islands in the Mackenzie River adjacent to the hamlet of Norman Wells, as well as additions to the existing refinery, were added to the 1983 assessment roll.

Municipal Affairs

A municipal administration training program, which by arrangement with McMaster University, includes certification, took place. In addition, an advanced seminar in municipal management was held with over 20 participants. To date there have been 53 graduates at the introductory level, 40 at the intermediate level and 32 at the university level.

Fluctuating demands for developed building lots in municipalities necessitated some re-structuring of municipal debenture debts relative to land development. A late spring coupled with financial restraints had the effect of retarding building construction, but in the latter part of the year a resurgence was evident and housing starts were almost back to normal.

Community Airports

The joint territorial/federal community airports program continued to provide improved airports and aviation support services at N.W.T. communities.

Sport and Recreation

The sport and recreation division was fully decentralized in 1983. There are now recreation officers in every region.

A major conference was held in Yellowknife in October. Delegates from sport, recreation and traditional games gathered to discuss the future direction of sport and recreation.

For the first time traditional games were held in all regions. Northern Games were held in Inuvik, Gjoa Haven, Pangnirtung and Coral Harbour, and Dene Games were held in Fort Resolution. A cultural contingent also participated at the World University Games in Edmonton in July.

Fifty-one communities participated in the Terry Fox Run and raised over $50,000 for cancer research.

Aboriginal Rights and Constitutional Development

Economic Function: General Government Services

Minister's Introduction

James Wah-Shee, as minister for Aboriginal Rights and Constitutional Development, provided direction and made significant progress in the portfolio during 1983. Native claims negotiations between the Territorial Government, Native groups and the federal government continued satisfactorily; an historic Conference on Aboriginal Rights and Constitutional Matters was held, and a second conference convened.

Dennis Patterson continued to serve as associate minister for Aboriginal Rights and Constitutional Development with primary responsibilities for eastern Arctic constitutional development and aboriginal claims.

In 1983, James Wah-Shee continued as chairman of the Constitutional Alliance and the Western Constitutional Forum (WCF). Dennis Patterson served as chairman of the Nunavut Constitutional Forum (NCF). The alliance and forums have as their membership elected representatives from the major aboriginal organizations and from the Legislative Assembly. The separate forums for the east and west were created by the umbrella organization, the Constitutional Alliance, following the 1982 territorial-wide plebiscite in which residents voted in favour of dividing the Northwest Territories.

The Constitutional Alliance sought consensus, through public participation, on a boundary between the east and west. The development and acceptance by N.W.T. residents of separate constitutions for the two new political jurisdictions became the mandate of the forums.

Both forums became incorporated as societies and in September 1983 signed financial constitutional agreements with the Government of Canada.

The forums continued to meet independently and jointly as the Constitutional Alliance. The NCF published a booklet entitled, 'Building Nunavut' outlining a preliminary set of Nunavut constitutional principles, visited Inuit communities and held public consultation meetings for input and review of the elements of a Nunavut constitution.

The WCF co-sponsored a series of research projects with the Legislative Assembly's special committee on constitutional development, produced and distributed a series of information packages to Mackenzie Valley communities and began a process of public consultation for input and feedback.

The Committee for Original Peoples' Entitlement (COPE) claim is nearing completion and a final agreement is expected to be reached once the jurisdictional overlap question is resolved.

The Tungavik Federation of Nunavut (TFN) claim also progressed. A number of provisions were initialled including national parks, territorial parks, archaeology, outpost camps, conservation areas, municipal lands and two documents outlining the purpose of Inuit land title and principles to guide the identification of areas of Inuit land title.

The Dene/Metis claim also saw more progress than the previous years. New leaders were elected to both aboriginal associations and a joint claim secretariat created.

Aboriginal Rights and Constitutional Development Secretariat

The Aboriginal Rights and Constitutional Development Secretariat continued to provide advice and support to the minister and associate minister, and managed and coordinated the Territorial Government's input in two interrelated processes - aboriginal claims and constitutional development.

The secretariat was actively involved, in organizing conferences and meetings which resulted in the formation of the Constitutional Alliance and the two constitutional forums (NCF and WCF).

The NCF has a draft proposal for a Nunavut constitution and public consultation began in 1983. Ratification is anticipated in 1984. The WCF carried out the first round of the public consultation phase in the fall of 1983 and will continue the consultations through the winter of 1984.

The secretariat also participated in the planning and preparatory work for the First Ministers' Conference on Aboriginal Rights and Constitutional Matters.

Northwest Territories Housing Corporation

Economic Function: Welfare

Minister's Introduction

As minister responsible for the Northwest Territories Housing Corporation, Arnold McCallum emphasized two major objectives in 1983. The first was development of homeownership incentives that encouraged greater numbers of people to own their own homes. To achieve this objective, and following direction from the Legislative Assembly, Mr. McCallum approved an increase in the forgiveable loan offered under the homeownership assistance program to $30,000 and endorsed a plan that made it more attractive to people living above the treeline. As well, the minister lobbied his federal counterparts to ensure adequate labour funding would be made available under the Canada Community Development Program (CCDP) and New Employment Expansion and Development (NEED) programs. Over 80% of all homeownership clients received labour funding support.

A high level of interest was generated throughout the Territories in support of all homeownership programs including the homeownership assistance program, the rural and remote program and the northern territorial rental purchase program. A senior citizens home repair program was approved, and $100,000 in base funding was committed. The program is designed to assist senior citizens on fixed incomes to undertake home repairs. The program went into effect October 3, 1983.

The second major objective set by the minister was the development of safeguards to ensure northerners and northern businesses benefit from construction activity. In addressing this concern, all construction contracts were adjusted and clauses emphasizing the need to utilize local labour were inserted. The Department of Economic Development and Tourism developed labour profiles of communities where construction activity was to take place and worked closely with the contractors and the corporation to ensure available semi- and unskilled labour at the community level was utilized.

In 1983 northern contractors were successful in competing in the construction field. In the corporation's major capital programs, excluding homeownership, contracts totalling $16,151,000 were let to northern construction contractors. This represented 94% of all money spent in capital construction. The corporation's business stayed in the North, representing an increase of 66% over 1981/82.

The board of directors of the housing corporation worked closely with Mr. McCallum in 1983. Board members are appointed by the Legislative Assembly from every part of the North, to use their collective knowledge in the development of housing policies. Because of their close working relationship with the minister, board members received the direction required to carry out the wishes of the Legislative Assembly.

The Northwest Territories Housing Corporation is responsible for the development, direction and co-ordination of social housing programs to ensure that an adequate standard of housing is available to residents of the Northwest Territories.

Finance and Administration

The capital budget for the housing corporation in 1983 totalled $33,325,000 with 6% funded by Canada Mortgage and Housing Corporation (CMHC) and 33% by the Government of the Northwest Territories.

The 1983 operations and maintenance budget for the corporation totalled $48,673,000 funded 30% from CMHC and 61.6% from the Government of the Northwest Territories. Rent collection and other non-cash items contributed 8.4%

Programs and Activities

Programs of the Northwest Territories Housing Corporation are delivered by 41 staff members in six district offices, located in Frobisher Bay, Rankin Inlet, Cambridge Bay, Inuvik, Hay River and Yellowknife. District staff are responsible for monitoring and assisting 45 housing associations and authorities, which carry out property management functions for approximately 4000 rental units.

The corporation's program satisfy two basic housing needs. The homeownership assistance program and rural and remote mortgage assistance program are offered for individuals capable of operating and maintaining their own home. For families who cannot afford the costs of owning and operating their own home, or in areas where homeownership is not an option, the corporation rents housing units.

Allocation of units in a community is based on needs surveys and is also the responsibility of the housing association or authority, within guidelines established by the corporation.

The homeownership assistance program assists approved clients to build their own home. Clients must have the initiative and resources to build the unit and the ability to assume all operating costs when the unit is completed. Assistance is provided in the form of a material package worth up to $30,000. The cost of freight to the community and the cost of a gravel pad, in accordance with the house specifications, is provided where required in addition to the material package. The client must provide all tools, labour and materials, not provided in the material package. In cases where the client can obtain private financing, the level of material assistance is reduced accordingly. Material packages were approved for 73 clients in 1983. Clients were responsible for securing their own labour funds through incentive programs offered by the federal government.

The rural and remote housing program, offered by the housing corporation in partnership with CMHC, assists clients by subsidizing mortgage payments to 25% of adjusted family income. Ten clients were approved under this program, with an average unit price of $80,000. An additional three units were to be funded in 1983, with construction scheduled for 1984.

The northern territorial rental purchase program is a rent to purchase plan, whereby a portion of the rent paid is applied to the purchase price of the unit.

The second phase of the corporation's two year construction cycle for public housing saw 84 new rental units being built in 12 communities.

Rehabilitation of the existing housing stock was emphasized, and 150 northern rental units were upgraded to meet health and safety standards. The roof retrofit program was continued with the repair of 151 units. Both programs will be extended into future years.

For public housing units that do not qualify for major rehabilitation, but require upgrading beyond the capacity of routine or preventative maintenance, the corporation offered the extra-ordinary maintenance program. This funding can be used to replace major household equipment correct health and safety code violations, or upgrade the energy efficiency of a unit.

The enriched emergency repair program is used to provide some upgrading to northern rental units; to extend the life expectancy of the unit until complete repairs can be done. Funding is provided to a maximum of $7,600 per unit under a cost-sharing agreement with CMHC. During 1983, $395,200 was spent on 42 units in the Hay River, Yellowknife and Inuvik districts.

The district offices provide training and support to housing associations and authorities. The Corporation also provides formal workshops for both district staff and housing association and authority personnel.

Board of Directors

Through changes to the Northwest Territories Housing Corporation Ordinance, the Legislative Assembly increased the board of directors to 12 appointed members. In 1983, the board held meetings in Frobisher Bay, Fort Smith, and Yellowknife.

Workers' Compensation Board

Economic Function: General Government Services

The Workers' Compensation Board was established under, and is responsible for, the administration of the Workers' Compensation Ordinance, 1977.

Assessments are levied on all employers in the Northwest Territories on all basis of a percentage of their payrolls, to meet all claims payable during the year, including costs of administration. The assessments year, including costs of administration. The assessments are also used to provide for payment of liabilities in respect of future compensation of accidents which have occurred or may occur, and to establish reserves, thereby preventing employers in the future from being unduly or unfairly burdened with such costs.

In 1983, benefits to workers were based on a year's maximum assessable remuneration (YMAR) of $23,200.

Approximately 2,650 accident claims were made. Lost time claims accounted for 40 per cent of this total.

The board raised the pensions of all existing pensioners to 1982 levels of payments on the YMAR of $23,200. Payments to widows were raised to $638 per month and payments to dependent children raised to $145 per month.

There was an increase in employers registered with the Workers' Compensation Board.

Merit rebate payments were again issued to qualifying employers operating in the Northwest Territories. These payments were made in 1983 based on the employers record for 1982. Over the past four years the board has paid back to employers nearly $3.5 million under its existing safety incentive program.

The safety incentive program was expanded program will continue to see employers with good safety records receive dividends, while employers with a high incidence of accidents will be levied additional assessments.

The board continued to assist St. John Ambulance to provide first-aid training for workers. Funding of $40,000 was made available to offer accident prevention and treatment instruction to workers.

Courts and Judiciary

Economic Function: General Government Services

The Courts

Organized and administered on a pattern-closely similar to that of courts elsewhere in Canada, the courts of the Northwest Territories are linked to and form an integral part of the nation's judicial network.

Avenues of appeal exist through the court system of the Northwest Territories to the Court of Appeal and from there to the Supreme Court of Canada. There are also avenues of review from the lower courts (and from various boards and agencies of the Northwest Territories) to the Supreme Court of the Northwest Territories, ensuring that these bodies exercise their powers within the limits described by law.

The Supreme Court of Canada

Being the final appeal court of Canada, the Supreme Court of Canada is a court of record and consists of nine judges presided over by the Chief Justice of Canada. In addition to their judicial duties, the Chief Justice or a designated Judge of the Court acts as the Administrator of Canada in the absence or unavailability of the Governor General. The Court sits only at Ottawa. Its decisions bind all lower courts.

The Court of Appeal

The highest appeal court of the Northwest Territories, the Court of Appeal is a court of record.

The court hears civil and criminal appeals from the Supreme Court and certain criminal appeals from the Territorial Court. Sitting at least once a year at Yellowknife and at other times elsewhere in the Territories or at Edmonton or Calgary, decisions bind all lower courts.

The Supreme Court of the Northwest Territories

The superior court of general jurisdiction for the Northwest Territories, the Supreme Court of the Northwest Territories is a court of record and has two resident judges, and a number of deputy judges who are all federally appointed judges of courts in the provinces.

The court holds trials in civil and criminal matters, sitting both with and without a jury. It also hears certain appeals and exercises powers of review in cases arising in the Territorial Court, the Juvenile Court, the coroner's courts, and before justices of the peace, as well as before various boards and agencies of the Northwest Territories. The Supreme Court sits at points throughout the Territories. Its decisions bind all lower courts.

The Territorial Court

A court of record for the Northwest Territories, the Territorial Court has four resident judges and a number of non-resident deputy judges. The court holds trails without a jury in criminal cases and in certain civil cases involving less than $5,000, and holds preliminary inquiries in criminal cases to be tried in the Supreme Court. The court sits at points throughout the Territories.

The Juvenile Court

Eight Juvenile Court judges, including the four Territorial Court judges, sit at various points in the Northwest Territories, as required under the Juvenile Delinquents Act.

The Citizenship Court

The Citizenship Court, consisting of judges of the Supreme Court and Territorial Court, sits at various points throughout the Northwest Territories, as required under the Canadian Citizenship Act.

The Coroners Courts

Ninety-five coroners hold inquests as required throughout the Northwest Territories.

Justices of the Peace

One hundred and twelve justices of the peace, sitting in their communities, hear matters under the criminal code and the ordinances of the Northwest Territories.

Court Officers

The Registrars of the Supreme Court of Canada and of the Court of Appeal, and the clerks of the Supreme Court of the Northwest Territories and of the Territorial Court, have functions which include the organization, direction and supervision of the registries of their respective courts, each of which operates quite separately from the other. They make all arrangements, under the supervision and direction of the judiciary, for the hearing of appeals, trials and other matters as required. They "tax" (or adjudicate upon) costs awarded by their respective courts, as between the parties to lawsuits.

The clerk of the Supreme Court also "taxes" disputed bills of costs that have been submitted by solicitors to their clients. Appeals from such taxations are heard, firstly by a judge of the Supreme Court and then, if appealed further, by the Court of Appeal.

The Sheriff of the Northwest Territories executes civil judgments and orders of all courts of record of the Northwest Territories, and may be required to make arrests of persons and of ships, in addition to making seizures of other property. The sheriff is responsible for the security and order of court premises, and for the summonsing of jurors in the Supreme Court of the Northwest Territories. Where necessary, the sheriff is assisted by members of the Royal Canadian Mounted Police, in their capacity as peace officers.

The Legal Profession

The members of the legal profession are subject to the discipline of the Law Society of the Northwest Territories under the Legal Profession Ordinance and as otherwise required by law.

The judges of the superior courts (the Supreme Court of Canada, the Court of Appeal and the Supreme Court of the Northwest Territories) are appointed from among barristers and solicitors of at least 10 years standing. Judges of the Territorial Court are appointed from among barristers and solicitors of at least three years standing.

Fifty-four barristers and solicitors resident in the Territories, are on the rolls of the Law Society of the Northwest Territories. In addition 136 non-resident members of the Bar are entitled to provide legal services in the Northwest Territories.

Native Courtworkers and Maliiganik Tukisiiniakvik

The Native Courtworkers Association and Maliiganik Tukisiiniakvik are corporate societies each of which is independent from but funded by government through the Legal Services Board. The Native Courtworkers Association has 10 courtworkers, located in the western and central part of the N.W.T. Maliiganik Tukisiiniakvik has a fully qualified lawyer and six courtworkers serving the Baffin area.

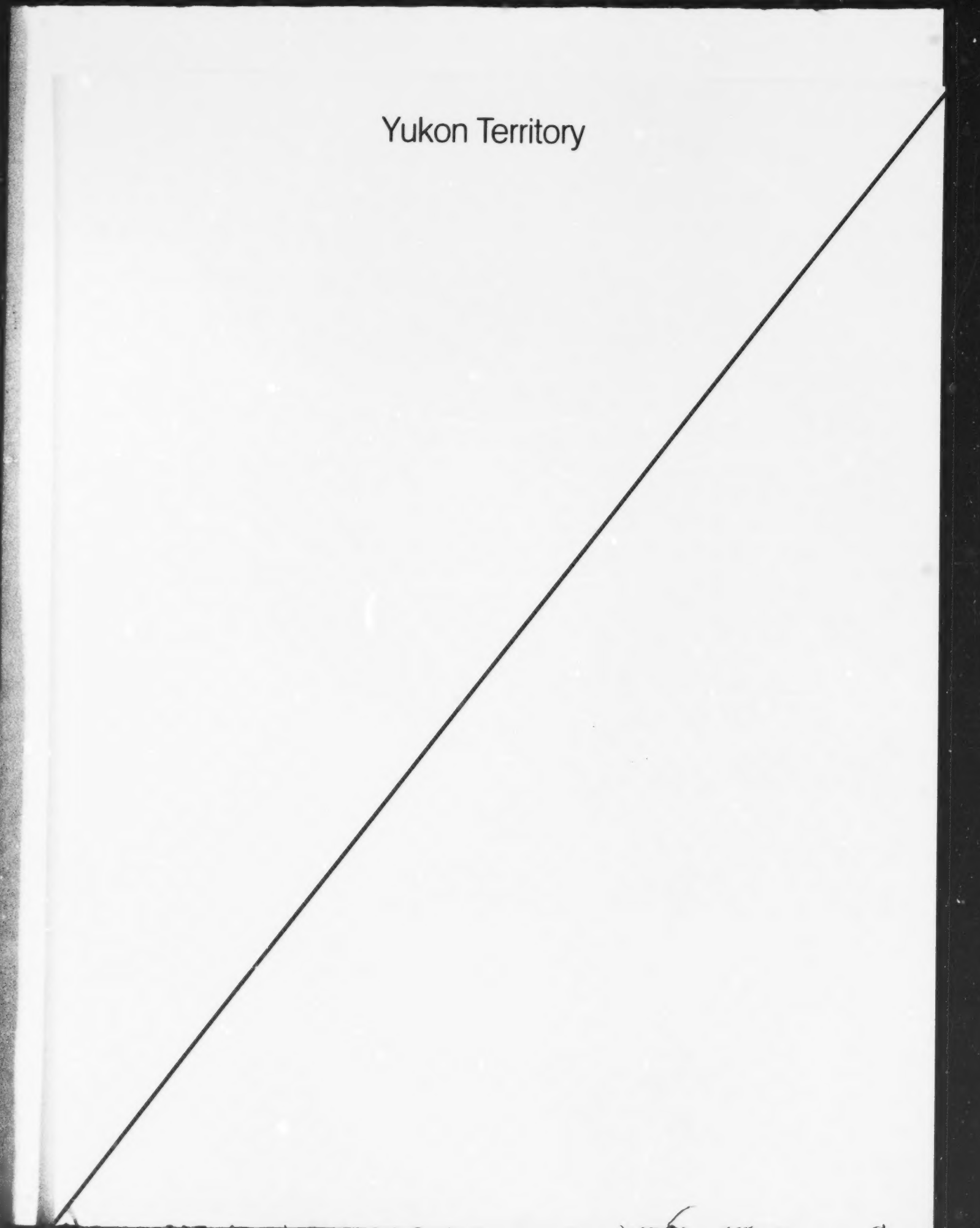
The courtworkers provide information and assistance in court matters to clients appearing before the Territorial Court, the Juvenile Court and the justices of the peace. They also assist legal counsel to prepare for court by providing a communication link with the clients. Although they do not provide legal advice, not being qualified as lawyers, they are specially trained and are knowledgeable in certain legal procedures, an can assist clients to initiate changes of name applications, child adoption applications and certain preliminaries in divorce cases.

The courtworkers also act as a referral agency, assisting clients to contact appropriate officials or agencies for further assistance, including legal aid. They distribute pamphlets with useful information on the legal rights of the individual and on other matters of concern to their clients.

Legislative Assembly

Activities of the Assembly during 1983 will not be reported here. Interested readers are referred to the Government of the Northwest Territories 1983 Annual Report which describes in detail the Assembly Sessions.

Yukon Territory



Executive Council

Economic Function: General Government Services

The Executive Council was expanded to six members in 1983, and is comprised of the following members with portfolio responsibilities as shown:

P.C. - Whitehorse Riverdale N
Hon. Chris Pearson,
Government Leader,
Minister of:
Executive Council Office,
Finance,
Public Service Commission.

P.C. - Whitehorse Porter Creek
Hon. Dan Lang,
Minister of:
Municipal & Community Affairs,
Economic Development.

P.C. - Tatchum
Hon. Howard Tracey,
Minister of:
Renewable Resources,
Highways & Transportation
Consumer & Corporate Affairs.

P.C. - Whitehorse Riverdale S
Hon. Bea Firth
Minister of:
Education, Advanced Education and Manpower,
Tourism, Recreation & Culture.

P.C. - Klondike
Hon. Clarke Ashley,
Minister of:
Yukon Liquor Corporation,
Yukon Housing Corporation,
Workers' Compensation Board.

P.C. - Whitehorse Porter Creek
Hon. Andy Philipsen,
Minister of:
Health & Human Resources,
Government Services.

The Legislative Assembly

The Legislative Assembly sat three times during the fiscal year.

Major pieces of legislation introduced, included a new Children's Act, Employment Standards Act, Legal Profession Act, Financial Administration Act, Access to Information Act, and a new Recreation Act.

A Legal Aid Agreement, an Economic Development Agreement and a Young Offenders Agreement were entered into or renewed with the Federal Government.

Executive Council Office

The Executive Council Office was expanded to include responsibility for Intergovernmental Relations and the Land Claims Secretariat, in addition to Public Affairs and Internal Audit. Administrative support was also provided to the Federal Relations Office in Ottawa.

The Office provides a wide range of service to the Executive Council, including the function of Secretary to Cabinet and to the various Cabinet Committees. The department reviews and analyses all Cabinet submissions and intergovernmental agreements, and coordinates all policies and activities of the Government of Yukon with those of federal and provincial governments.

All protocol activities are coordinated and administrative support is provided to the Commissioner of Yukon and the Commissioner's Awards Committee.

The flow of Cabinet documents and submissions will be streamlined through increased use of word processing equipment and improved liaison with departments. Program and policy review and analysis will be carried out in conjunction with the Priority, Policy and Planning Secretariat in observance of both long and short-term goals of the Government.

Intergovernmental Relations

Effective July 1st, 1983, Intergovernmental Relations was transferred to the Executive Council Office. The departmental objectives of the Executive Council Office were reviewed with particular attention to the intergovernmental relations function, policy review and analysis, and the support to other departments in the performance of these functions.

The Branch renewed and strengthened intergovernmental contacts with external orders of government during the year, and participated in a number of interdepartmental committees. Departmental personnel were involved in Phase I of the implementation preparations for Yukon Indian Land Claims. The Branch coordinated Yukon's input to the Canada-USSR Science Exchange Program and the ongoing consideration of a Scientific Resource Centre in Yukon.

Protocol matters and visits to Yukon by diplomatic and consular officials and senior officials were coordinated by intergovernmental relations. The chairmanship of the Governor General's Canadian Study Conference was provided by the Branch. Three Yukon delegates attended the Conference.

Land Claims Secretariat

Yukon Indian Land Claims negotiations culminated in an Overall Agreement-in-Principle later endorsed by the Federal Cabinet. The A.I.P. is in process of ratification by the Yukon Indian Communities.

Negotiations concerning the COPE claim proceeded with some difficulty. An "Inuvialuit Settlement Agreement" passed the Federal Cabinet with the sanction of the Government of Yukon by way of an Accord, signed by the Governments of Canada and Yukon and COPE. The Accord attempts to alleviate certain concerns expressed by the Government of Yukon respecting the COPE Agreement. The COPE AGreement is currently in the process of ratification by the relevant Inuit. Legal drafting is underway.

Internal Audit

Responsible to Management Board, Internal Audit provides an independent review of the government's financial and management information systems as well as those operations resulting in the receipt and disbursement of public funds.

The continuing development and implementation of financial and management systems has increased the government's reliance on computer produced information to assist management in meeting their responsibilities for program delivery while maintaining accountability for the receipt and use of public funds. The objective of Internal Audit is to provide assurance to management of the integrity of that information and that an acceptable level of accountability for the receipt and use of public funds in maintained. The office also provides an independent review of programs funded under cost-shared agreements with Canada requiring audit verification prior to recovery of funds expended.

The Federal Relations Office

The Office, located in Ottawa acts as a communications link between the Government of Yukon and the Federal Government. Staff of the Office gathers information by attending intergovernmental, parliamentary and senate committee meetings and through daily contacts with federal officials. It provides assistance to departments of the Government of Yukon with respect to ministerial and senior officials visits, and represents Yukon at intergovernmental and federal-provincial ministerial meetings on request of the departments.

In 1983, a Fiscal Relations Officer from the Department of Finance was attached to the Ottawa office to coordinate financial negotations with the Federal Government regarding formula financing.

Public Affairs Bureau

The Public Affairs Bureau provides support to Yukon government departments and agencies in communicating programs and activities to the public.

Major activities included photographic and production assistance on audio-visual presentations by the Department of Tourism, Recreation and Culture, media and public relations support on the Department of Renewable Resources Predator Control Program, public awareness campaigns for the Department of Health and Human resources and co-ordination of the advertising needs of the Department of Education, Advanced Education and Manpower.

The bureau also produces the Government of Yukon's annual report, the monthly Yukon Info., the employee newsletter, Sluice Box, and the Yukon Facts booklet.

Department of Consumer and Corporate Affairs

The Department of Consumer and Corporate Affairs promotes and develops orderly and responsible commercial, employment and professional practices in Yukon. The Consumer Services section ensures that licenced professionals meet legislated qualifications; advises consumers of their legal rights and mediates disputes between landlords and tenants. The department increases consumer competency through the development and dissemination of educational materials.

Corporate Affairs provides an institutional framework for the orderly conduct of business and the accumulation and allocation of capital through maintenance of a number of registries.

Labour Services maintains and promotes basic employment standards; the development and maintenance of acceptable safety standards; and the development and acceptance of basic human rights for all Yukoners.

In 1983/84 the department transferred responsibility for administration of Transport Services, included weigh stations and motor vehicle registry, to the Department of Highways and Transportation.

Department of Education

Economic Function: Education

The Advanced Education and Manpower Branch is responsible for adult institutional training, apprenticeship training, tradesmen's certification, industrial training, post-secondary student financing, manpower planning and employment development programs.

Program Highlights 1983-84

An In-House Apprentice Program begun this fiscal year, provided skills training to twenty Yukon residents who would not have been able to continue their training given the current economic conditions.

The Yukon and Federal Governments jointly funded the Cyprus Anvil Stripping Program and Apprentice Program. Yukon contributed $1 million.

Advanced Education and Manpower received approximately $700,000 under the Canada Employment and Immigration Skills Growth Fund to upgrade Yukon College facilities to accommodate training in new technologies.

Yukon College offered programming ranging from academic upgrading through trades and technical to business administration and university transfer. Approximately 850 students participated in full-time programs, while 900 were involved in part-time programming. Community Learning Centres are located in a number of rural communities and a mobile unit provided introductory small engine repair training in three communities.

Primary Goals and Objectives 1984-85

Several programs offered through Yukon College will reflect new technological requirements of the labour market, including Computer Management, Engineering Design and Drafting Technology, Industrial Electronic Technology and Electricity. A second mobile unit will travel to three rural communities to provide instruction in Basic Home Repair.

The Manpower Planning and Industrial Training Unit will continue to work closely with Yukon employers to enhance the quality and quantity of employer-based training opportunties. The Apprenticeship unit will again sponsor trades upgrading courses to those wishing to obtain Journeyman status through Tradesmen Qualification Certification. Employment Development Programs will provide financial incentives to encourage employers to develop quality employment opportunities for Yukon residents.

The Public Schools Branch is responsible for the provision of primary, elementary and secondary education for all school age children in Yukon.

Program Highlights 1983-84

A highlight of the 1983 school year was the hosting, by Yukon students, of the 1983 Interchange on Canadian Studies. The 1983 Interchange - 60 Above Au 60e - included over 300 Canadian students from across the country. The conference was supported, in part, by the Secretary of State - Youth Services Division.

Micro-computers were placed in every Yukon school and two-day inservice training sessions were held for all Yukon teachers.

A review and updating of the 1979 Sharp report was begun. The revised Rural School Study is expected to be completed by December 1984.

An Alternative Programs Co-ordinator, a Co-ordinator for the Gifted and a Special Education Co-ordinator were hired.

Primary Goals and Objectives 1984-85

The program initiatives begun over the last year will continue. It is also expected that Alternative Programs and Programs for the Gifted will be implemented into school programming this year.

Capital projects this year will include the completion of the Ross River and Teslin Industrial Arts facilities. Phase Three of the Christ the King High School expansion will be completed.

Department of Finance

Economic Function: General Government Services

The Department ensures that the Yukon Government's financial resources are planned, utilized and controlled in a manner consistent with the priorities of the Government.

Program Highlights 1983-84

- Establishment of Management Board
- Proclamation of new Financial Administration Act
- Completion of Capital Plan
- Further advances on Fiscal Formula

Primary Goals and Objectives 1984-85

- Development of pilot projects in program evaluation
- Upgrade the Financial Management Information System and development of fully-integrated computerized financial accounting system
- Implementation of Fiscal Formula
- Implementation of new Regulations and Directives under the Financial Administration Act

Department of Health and Human Resources

Economic Function: Health

Human Resources Branch

Responsibilities

The Branch administers the Social Assistance Act, the Rehabilitation Services Act, the Pioneer Utility Grant Act and the Yukon Seniors Income Supplement Act.

Programs and services the Branch delivers or oversees delivery of in a policy making capacity include: Social Assistance, the Yukon Opportunity Plan, Services to Seniors, Vocational Rehabilitation Services, Alcohol and Drug Services, Detoxication Services, Emergency Welfare Services, Pioneer Utility Grant, the Territorial Income Supplement and community development.

1983-84 Review

- Capital construction at Macaulay Lodge to upgrade the facility, extend its life span and make it more suitable for caring for seniors with multiple health problems was begun.
- Macaulay Lodge staff was augmented.
- The Branch performed a cost/benefit study of the Yukon Opportunity Plan.
- A comprehensive review of Geriatric and Rehabilitation programs in the Yukon with a view to co-ordinating, refining and improving services was begun.
- A review of the Social Assistance Act, Regulations and Policies was begun and a second Social Assistance Appeal Committee was established.
- Contributions to Crossroads Treatment Centre for Alcoholism, the Yukon Rehabilitation Centre and the Yukon Women's Transition Home were made.
- Training programs in the Alcohol and Drug field to professionals and para-professionals were provided.
- The Handy-Bus Program in Whitehorse was taken over from the Department of Government Services.

Plans 1984-85

- Capital construction and renovations at Macaulay Lodge will be completed.
- Alcohol and Drug Programs in Yukon will be reviewed and refined.
- The financial accountability of all programs will be improved.
- A reorganization of existing programs, resources and services in the Vocational Rehabilitation and Seniors area as a function of outcomes from the Rehabilitation and Geriatric Services Review will be begun.
- The Social Assistance Act, Regulations and policies will be reviewed.
- Community and institutional disaster response emergency training will be extended.

Health Services Branch

Responsibilities

The Health Services Branch administers health and hospital insurance as well as community health services throughout Yukon. Legislation administered includes the Health Care Insurance Plan Act, the Hospital Insurance Services Act, the Public Health Act, the Mental Health Act, the Travel for Medical Treatment Act, the Cancer Diagnosis and Control Act, the Vital Statistics Act, the Marriage Act and the Change of Name Act. Specific programs include Medicare, Pharmacare, Extended Health Benefits, Family Life Services, Speech Pathology and Audiology and Vital Statistics.

1983-84 Review

- A new computer registration system for the Health Care Plan was developed.
- General audiology equipment including a sound suite was acquired.
- Major amendments to the Mental Health Act were prepared.
- A Branch Operations Officer for the Health and Hospital Insurance programs was recruited.
- The Health Care Insurance Plan and Hospital Insurance Services Regulations were reviewed.

Plans 1984-85

- The new registration system, including a re-registration of beneficiaries will be implemented.
- The premium collected computer system will be completed.
- A new medical claims insurance system will be designed.
- A new Health Care Insurance Plan Act and a new Mental Health Act will be developed.
- The Vital Statistics, Change of Name and Marriage Acts will be revised.

Community and Family Services Branch

Economic Function: Welfare

Responsibilities

This Branch administers the Children's Act, the Day Care Act, the Corrections Act, (Part five) and the Young Offenders Act. The Branch provides a wide range of services for children and families, including adoption, foster care, day care subsidies, counselling and support services, residential services of various kinds and programs for young offenders. The Branch promotes public awareness of child abuse and neglect and provides grants to community based social services agencies.

1983-84 Review

- The Branch was reorganized to provide a higher level of service to children and families.
- Fostered public input into the Children's Act.
- Prepared for implementation of the Young Offenders Act, in conjunction with other agencies.
- Increased the use of Family Support Workers, particularly in Whitehorse, thereby negating the need for some children to come into care and delaying others coming into care. The number of children in care continued to decrease and the Branch views this as a significant accomplishment.
- Increased the maximum amount payable per child in the Whitehorse Region under the Day Care Subsidy program.

Goals and Objectives 1984-85

- To continue to promote public awareness of child abuse and neglect.
- To minimize the incidence of children needing to come into care by promoting community based services to children and families.
- To maintain and safeguard children under the care of the Director of Community and Family Services through the operation and maintenance of group homes, foster homes, specialized facilities for the placement of children and the provision of supportive, culturally appropriate services to the child and family.
- To encourage the development and operation of community based social services agencies.
- To assist in protecting the community from delinquency among its young people and to promote alternatives to delinquent behaviour.
- To provide facilities which have a safe and controlled environment for the detention, supervision, assessment and rehabilitation of young offenders.

Department of Government Services

Economic Function: General Government Services

The Department assists user departments in their program delivery and co-ordinates general services to all departments and agencies of the Yukon Government. Responsibility for the Emergency Measures Organization was transferred to Municipal and Community Affairs during 1983/84.

Property and Administration

The branch provides a program of general insurance coverage for the government, office accommodation for all government departments and security programs.

Systems and Computing Services

The branch ensures the effective and economic use of electronic information processing technology in support of government program activities. The branch comprises of a processing services section, a systems development group, and a service centre.

During 1983/84, twenty four new projects were initiated, whereas in previous years no more than three or four projects were undertaken. This higher level of activity will bring about much needed improvements to administrative and information systems in areas such as Health Services, the Motor Vehicle Branch, Property Assessments, the Public Service Commission, and many others.

The branch's IBM 4331 computer was replaced with a larger IBM 4341 to meet the growing demand for computer processing. More applications are going "on-line", and the number of on-line terminals doubled to about thirty. The computer centre went from one shift to two shift-a-day operation. The centre now processes close to two million transactions per year.

Supply Services Branch

The Branch provides a uniform level of centralized services to all government departments and agencies and promotes the development of the Yukon business community through consistent purchasing practices. The branch comprises six sections: Purchasing, Queen's Printer, Asset Control, Transportation, Warehousing and Records Management.

During the year a computer program was developed and implemented for government asset records. Departments are now able to receive up to date records of their assets by location.

In 1982/83 purchase orders totalled $24.3 million (77.3 percent within Yukon) and service contracts totalled $9.4 million (76.6 percent within Yukon). Annual auctions of surplus materials produced a revenue of $159,417. The central stores warehouse processed 5,054 departmental requisitions with a total value of $970,140.

Public Works Branch

The Branch constructs buildings and works on behalf of the Government of Yukon and maintains them in accordance with approved standards reflecting government and community needs.

Major construction projects in 1983/84 included the removal of asbestos from, and the subsequent reinsulation of various highway grader stations; the addition to Macauley Lodge; the addition to the Carcross school, and mechanical renovations at Whitehorse Elementary School.

Department of Highways and Transportation

Economic Function: Transportation

Responsibility for Motor Vehicles, Weigh Station operations and the Motor Transport Board was transferred during 1983/84 from Consumer and Corporate Affairs to Highways and Transportation. The department continued to operate a VHF radio communication system for Yukon and federal government departments, and also administered the Northern Exploration Facilities Program.

Highway Maintenance

In 1983/84, 200 km of bituminous surface treatment was added to main highways in Yukon. Of the total of 4,469 km of roads (maintained by 22 highway maintenance camps throughout the Yukon highway system), over 1255 km are now paved or have a bituminous surface.

Highway Construction

Grades were improved and BST[1] applied on 37 km of the Klondike Highway south of Carmacks. The Klondike Highway now has either a paved or bituminous surface from the Alaska Highway to the junction of the Campbell Highway. The 15 km section from the Dawson Airport to Dawson City was resurfaced and had BST applied. Additionally, BST was applied in the communities of Stewart Crossing and Pelly Crossing.

Reconstruction was carried out on 14 km of the Klondike Highway between the Alaska Highway and Carcross.

Culverts at Ross River #3 and #4 on the South Canol Road were replaced.

On the Dempster Highway, further grade improvements were made at two sites to reduce the winter maintenance required due to snow drifting. In addition, 46 km were reconstructed and new gravel surfacing applied to 61 km.

Airports/Ferries

Yukon maintained 10 Arctic "B and C" airports with funding from Transport Canada. In addition, 20 emergency airstrips were maintained with Yukon funding. Yukon provided communication and weather services at Old Crow, Faro, Ross River and Teslin, while Transport Canada provided those services at Mayo, Dawson and Burwash.

Upon completion of a passenger/cargo shelter at Beaver Creek by Transport Canada, Yukon assumed operation of observer/communicator services at the Beaver Creek airport.

The department continued to operate a river ferry at Dawson and a barge at Ross River.

Transport Services Branch

This Branch which includes the Motor Vehicles and Weigh Stations sections, provided support services to the Motor Transport Board. The Board is responsible for the economic regulation of the Yukon motor transport industry.

The Motor Vehicles section licences motor vehicles and drivers and administers related sections of the Motor Vehicles Act.

Weigh Stations enforced sections of the Motor Vehicles, Motor Transport, and Highways Acts related to commercial motor transport. A mobile enforcement officer was hired to increase enforcement capability.

Weigh Stations collected revenue under the Fuel Tax Act. Permits were issued and fees collected from commercial vehicles entering the Northwest Territories via the Dempster Highway, by Yukon Weigh Stations acting as agents of the N.W.T.

Department of Justice

Economic Function: General Government Services

The Justice Department provides legal advice and legal services to all departments of the Government of Yukon, and provides a variety of services to the public.

It administers the Yukon Supreme Court and the Territorial Courts in Whitehorse, the circuit courts to the other communities, and the Justice of the Peace Courts located throughout Yukon.

The land titles, public administrator and legal aid offices are also administered by this Department.

Probation Services maintains offices in Whitehorse, Watson Lake and Mayo and Institutional Corrections runs the Whitehorse Correctional Centre.

Policing in Yukon is carried out by the R.C.M. Police under a cost-sharing agreement with the Federal Government. Native Special Constables and Native Courtworker services are also provided by agreement.

The Department is responsible for the development of human rights policy and the Women's Bureau.

Department of Municipal and Community Affairs

Economic Function: Local Government

Municipal Administration Branch

Responsibilities

The Branch promotes the development of municipal government in Yukon, promotes financial stability, and provides for an equitable level of service in Yukon communities.

Review 1983-84

Amendments to the Municipal Act (1980) were passed during the 1983 Fall Session of the Legislative Assembly and the new Municipal Act came into force on January 16, 1984. A major provision of the new Act enables the Local Improvement Act to be repealed twelve months from the implementation of the Municipal Act.

[1] Bituminous Surface Treatment

Watson Lake, the first local improvement district to become a municipality pursuant to the new Municipal Act, assumed Town status on April 1, 1984. The local improvement districts of Mayo, Teslin, Haines Junction and Carmacks are scheduled for incorporation during the remaining months of 1984.

An amendment to the Municipal Finance Act provides for a more equitable system of distributing municipal operating grants, by offering an assessment equalization grant that addresses the difference in assessments between Whitehorse and other organized communities.

Community roads, garbage dumps, and sewage treatment facilities were upgraded throughout Yukon. Building projects included upgrading of firehalls in Beaver Creek, Destruction Bay, Carcross, Carmacks and Ross River; conversion of an old liquor store to a firehall and ambulance station in Mayo; and construction of a new ambulance garage in Teslin.

The City of Whitehorse was provided with funding of $1.1 million towards the upgrading of the existing swimming pool to that of a year round facility, and towards the surfacing of Mountainview Drive and Quartz and Copper Roads.

A bituminous surface treatment program for community roads was carried out in Whitehorse, Carmacks and Watson Lake.

Plans 1984-85

Following incorporation of existing Local Improvement Districts as Municipalities, the Department will work with unincorporated communities seeking Hamlet status. Local Government procedures and Legislation will be reviewed with reference to the Yukon Indian Land Claims Agreement - In-Principle. The Community Assistance Act will be updated.

Lands Branch

Responsibilities

The Lands Branch is responsible for the administration and management of lands under the control of the Yukon Government and for the orderly sale and leasing of community lands.

Review 1983-84

During the 1983/84 year, 95 sale agreements were signed with individuals and builders and a total of 290 cottage lot lease holders ere issued lease agreements or title to their lots.

In addition, 130 applications were received for agricultural parcels. Twenty-two agreements were signed with individuals and five other applications were approved.

Plans 1984-85

Major Land Development Projects for 1984/85 include acreage residential development in Whitehorse, Haines Junction, Carcross, and Carmacks; airport industrial lots at Mayo; and industrial lots at Haines Junction and Carmacks. Planning design and preconstruction development for Phase II of the acreage residential subdivision at Watson Lake; planning and site investigation for an acreage residential subdivision in Dawson City; site investigation and planning for a recreational cottage lot development; and design and planning of an agricultural subdivision in the Whitehorse area are anticipated to be underway in the 1984/85 year.

The Land Branch is expecting to table amendments to the Lands Act; regulations respecting the management of forest resources on Commissioner's Land; and new Area Development Regulations for Whitehorse North and the Golden Horn Area.

The transfer of recreational cottage lots from the Federal Government and the process of offering these lots for sale is largely complete. Remaining federal recreational leases will be surveyed during the 1984/85 year, transferred, and offered under agreement for sale to present lease holders.

Assessment Services Branch

Economic Function: General Government Services

The Branch provides property assessment services to all Yukon Taxing Authorities by preparing assessment rolls for municipalities and the Yukon Government. Officers of the Branch defend assessments at Assessment Review and Appeal Board Hearings, assist the Territorial tax collector and provide a real property appraisal service to other Government Departments.

Review 1983-84

Assessors continued to update assessment on a five year inspection cycle. Reassessments were completed during the summer of 1983 in Dawson and Porter Creek. New assessments will be undertaken in Haine Junction, Watson Lake, Faro and parts of Whitehorse during 1984.

Protective Services Branch

Responsibilities

The Branch is responsible for the administration of legislation dealing with public safety, including fire protection, building inspections and most recently, the Civil Emergency Measure Act. The Yukon Ambulance Service is also operated by this Branch.

Review 1983-84

Fire Section

Fire training courses were conducted in ten communities for a total of 76 volunteer firefighters plus 14 other interested persons during 1983. In addition 280 school children were given a presentation of fire safety.

During 1983 there were 190 fires resulting in $1 million property losses. In these fires, 7 people were injured but there were no fatalities.

Ambulance Section

The ambulance inspector conducted 16 First Aid Courses for a total of 219 participants and 4 Cardio-Pulmonary Resuscitation courses for 41 participants during 1983.

The 12 ambulance stations responded to 1168 emergency calls.

Building Inspections

Three hundred and eighty building permits were issued during 1983, a significant increase over the past several years.

However, the total value of construction projects dropped to $9 million. Inspections of wood stove installations also increased over the previous year.

Boiler Inspections

Thirty-six examinations were held for heating engineers and 20 for pressure welders. Forty-six new boiler designs were registered, bringing the total in Yukon to 725 registered boilers and pressure vessels. The section recorded 273 inspections funder the Boilers and Pressure Vessels and 28 under the Elevators and Fixed Conveyances Act.

Municipal Engineering Branch

Responsibilities

The Branch is responsible for managing and providing advice on municipal systems to organized communities and managing the Community Television System and Mosquito Control System.

Review 1983-84

In April of 1983 the Branch was given the additional responsibilities of the Mosquito Abatement Program, Community T.V. System, and the Operation of Existing Water Distribution and/or Sewage Collection systems and garbage dumps in the unorganized communities.

During the 1983/84 fiscal year the Branch was responsible for over 50 capital projects involving expenditures in excess of $3.5 million.

Plans 1984-85

Major plans for the Branch for 1984/85 include upgrading the T.V. system, improvements to access roads, improvements to sewage disposal pits, continuation of the bituminous surface treatment program in various communities and completion of the Haines Junction Lagoon.

Public Service Commission

Economic Function: General Government Services

The Commission is the agent of the Yukon Government for all public service personnel matters.

The major issues dealt with during 1983/84 were:

- the enactment of restraint legislation for the 1983/84 and 1984/85 fiscal years (6 and 5 program);
- the negotiation of a one year contract with the Public Service Alliance of Canada under the provisions of this legislation;
- the rollback of the second year of the contract with the Yukon Teachers' Association to comply with the 6 & 5 program;
- the development of a policy concerning Unwanted Sexual Attention;
- the development of a policy concerning Unwanted Sexual Attention;
- the establishment of a resource library;
- the development of a costing model for collective bargaining purposes;
- the commencement, and in a number of cases the completion, of full scale organizational reviews of five government departments as well as the commencement of a government-wide organizational review at the senior management level. The reviews were all conducted by consulting firms retained by the Commission.

Recruitment and Labour Relations

During the year, a one year contract was negotiated with the Public Service Alliance of Canada under provisions of restraint legislation. Regular joint consultation meetings were held with the union and in mid-year, a format for regular joint consultation meetings with the Teachers Association was established with Commission representation.

Permanent Appointments from Outside the Public Service:	
a) From within Yukon	317
b) From outside Yukon	36
Permanent In-Service Appointments:	
a) by promotion	34
b) by transfer	60
Casual Appointments (including contracts)	1496
Total Appointments	1849

Employee Records and Pensions Branch

Two pre-retirement seminars were held. Employees and their spouses attend such seminars at Public Service Commission expense.

Training and Development Branch

The branch assisted line departments in developing competency profiles, training plans and evaluation methods for on-the-job training of employees and underfill candidates (those hired with departmental commitment to train them to the full operating level).

Compensation

The branch is responsible for job evaluation, classification, compensation, organizational reviews, costing of bargaining demands and staff establishment control.

Department of Renewable Resources

Economic Function: Economic Development - Other

The Department is responsible for planning, managing and developing Yukon's renewable resources, and consists of three major branches, Resource Planning and Management, Wildlife and Parks Services and Administration.

Resource Planning and Management

This branch comprising two sections, Wildlife Management and Land and Resource Management, is responsible for management and research on wild animals and birds. In addition, it provides advice on land-use matters, assists the Department's education and public relations projects and cooperates with other governments on wildlife or habitat projects that overlap political boundaries or jurisdictions.

Wildlife Management

The wildlife management section is presently involved in some 25 wildlife and habitat projects. The more significant ones are briefly summarized as follows:

This is the third year of an intensive investigation of moose and predators in game management zones 7 and 9. Radio-equipped moose and wolves allow the department to assess the productivity of the moose population, and the causes of calf and adult mortality. Last year's data indicate that grizzly bears take a high percentage of young moose calves. During 1984 this study will therefore be expended to include a population study of grizzlies and wolves.

Wolf management and research began in 1983 in the southwestern Yukon, as part of the moose-predator study. Wolves were surveyed in a 6500 km^2 area in March 1983 and a 15,000 km^2 area in 1984. Radio telemetry studies of 28 marked wolves in 11 separate packs allowed for the establishment of predation rate data, territorial dynamics and population density data.

An intensive sheep-wolf study was initiated, designed to examine the ecological relationship of gray wolves to Dall sheep. A wolf reduction program was begun.

Long-term monitoring of the Porcupine Caribou herd numbering 12,000 animals and of its harvest continued as did monitoring of certain sheep and goat populations.

The Department initiated a muskrat investigation in the Old Crow Flats area of northern Yukon, and began a population study of wolverine in the Kluane Lake area in cooperation with the University of Victoria.

The fur-bearer section continued its involvement in trappers' education, including humane trapping methods, pelt preparation, and fur marketing.

The annual, detailed monitoring of fur-harvests by trappers continued.

This year saw the continuation of several birds of prey projects; the initiation of several new ones and the completion of others. On-going management projects included peregrine falcon reintroduction and population surveys on the lower Yukon River, waterfowl (primarily geese) surveys of rivers in the Peel River Drainage, and monitoring of gyrfalcon populations. Annual ptarmigan censuses were conducted at Haines Summit, North-Fork Pass and the Cantung Road Summit; sharp-tailed grouse were censused at Burwash Uplands.

The data processing section is responsible for the annual assessment of big game and fur-bearer harvests, it also assists biologists in the analyses of research data.

The laboratory was involved in data collection for several projects. Skull, horn and kill information was collected from those game species designated as mandatory submissions. Sheep and goat jaws from all animals shot were again inspected for the continuing assessment of tooth and bone disease.

Wolf and wolverine carcasses were necropsied and analyzed to determine sex/age structure, litter size, reproductive potential, body weights and measurements, stomach contents and general physical condition. Samples of prey were collected at wolf kills during the winter to determine species, condition, sex and age.

Seventy-six grizzly and 76 black bear skulls of hunter-killed animals were measured.

Land Management

Initial resource inventories were completed for proposed Territorial Parks at Coal River Mineral Springs and Frenchman-Tatchun Lakes. Road access to new campgrounds at Tatchum and Frenchman Lakes were surveyed, planning for the campgrounds was completed. Construction of the campground at Tatchum Lake was begun.

Planning was completed and construction begun for a new campground at Moose Creek.

Boundary surveys were completed for campgrounds at Tatchum Lake, Pine Lake, Lake Creek, Fox Lake, Laberge and Wolf Creek.

Wildlife and Parks Services

Branch responsibilities include the development, administration and enforcement of resource related legislation and the Pounds Act and Brands Act.

The Branch is also responsible for the construction, rehabilitation and maintenance of Yukon campgrounds, parks, and the rehabilitation and stabilization of historic sites. Pine Lake and Carcross Campgrounds were completed and are now open to the public. In addition, work commenced on the Tatchum-Frenchman Park Complex, and Moose Creek Campground. Other rehabilitation and expansion occurred in campgrounds such as Million Dollar Falls, Aishihik Lake, Klondike River, Yukon River, Tagish and Squanga Lakes. Work is also continuing on the rehabilitation and stabilization of historic sites at Fort Selkirk, Hootalinqua and the Tutshi.

The volunteer auxiliary conservation officer program was intensified.

A number of publications and audio-visuals were developed and produced by the Information and Education Section of the branch; these included "Be Bear Aware", Renewable Resource Bulletins 1 to 10, "Yukon Bear, Bacon and Boot Grease" and "Yukon Moose: In Decline?". In addition, the section presented courses on outdoor education and firearm safety, coordinated numerous public meetings, and continued with the development of a new Outdoor Education Firearm Safety Training Manual, scheduled for completion in early 1984.

Department of Tourism, Recreation and Culture

Economic Function: Culture and Recreation

The Department is responsible for the development and management of libraries and archives services; recreation services and heritage resources. The key responsibilities of Recreation are to encourage and support the development of sports, arts, community recreation and fitness opportunities. The Department also manages the Yukon tourism industry by administering an extensive tourism marketing and development program. The Department will coordinate Yukon's participation in the 1986 World Exposition in Vancouver.

Organization

The Department has five line programs:
1. Libraries and Archives
2. Heritage and Cultural Resources
3. Tourism
4. Recreation
5. Expo '86

Libraries and Archives Branch

In February 1984, the Library Services Branch and Yukon Archives were merged into one Branch with 3 main activities: Yukon Archives, Technical Services and Public Library Services. The objectives of the new Branch are:

- To provide public library services and increase community involvement in library development.
- To provide for the adequate documentation of the history of Yukon.
- To maintain and preserve the Government's records in accordance with the Archives Act.
- To provide for the implementation of the Access to Information Act.

Yukon Archives

In 1983-84, the Yukon Archives were used by more than 4,200 researchers. The photographic technician processed 2,912 orders.

A Summer Canada '83 project was sponsored by the Yukon Historical and Museums Association at the Archives. All manuscript collections were subject analyzed so as to be more accessible for the public. In addition, a finding aid was prepared to the Whitehorse Copper Ltd. records. A project was undertaken in the fall during which the subject authority file was completed, archives displays were repaired and photographic collections were conserved and processed.

Katimavik volunteers worked in the Archives from September 1983 - February 1984 and provided valuable assistance to staff.

A bibliography on Martha Louise Black was prepared in addition to a display on the Yukon Expedition 1887-88 and Sam McGee. An Open House in November attracted 150 visitors and archives displays were shown in Dawson City, Keno, Whitehorse, Fort Smith, Northwest Territories and Ottawa, Ontario. A conservation workshop for museum personnel was sponsored.

The Access to Information Act become law in November 1983 and provides for public access to information in Government files. The point of access is the Yukon Archives. An inventory of all Government records is underway to assist members of the public in finding required information. A related brochure was prepared for distribution throughout Yukon.

One hundred and five new collections were acquired this year. These included:

Girl Guides of Canada, Yukon Council	1964-79
Boy Scouts Association of Dawson	1940-63
Victoria Faulkner Papers	1896-1979
Sam McGee Miscellany	1905-1961
William Charles Peter photographs	1901-04
Allen Wright Collection	ca.1824-1982
Willis Grafe Collection	ca.1942-1982
Gudrun Sparkling Photograph Collection	ca.1925-1945
Geoff Bidlake Photograph Collection	ca.1920-1958
Bill Hare negatives	1922-1940's
Alan Fry, Old Crow Collection	1964
Territorial Treasurer records	1914-71

Library Services

The Technical Services section acquires, processes and distributes books to schools and public libraries throughout Yukon. The Public Library Services section provides a variety of services to public libraries including the operation of the Whitehorse Public Library, grants to branch libraries and audio visual hardware and software.

A new branch library was developed in cooperation with the school library in Teslin. A workshop was held in October and was attended by librarians and library board members from most branches in Yukon.

L'Assocation des Franco-Yukonais presented a number of French books to the Whitehorse Public Library. These books, along with others, were fully catalogued and made available with French headings and subject entries.

The library participated in the Children's Book Festival and in the National Book Festival during which prominent authors gave readings in Whitehorse and a number of other Yukon communities.

New branch libraries will be developed at Carmacks and Carcross. A librarian workshop will be held. Both library and archival materials will be centralized in these communities.

Plans for 1984-85

Plans for 1984-85 include the development of 4 new small displays at the Yukon Archives, the preparation of a finding aid to the Erik Neilson papers and the implementation of the Access to Information Act.

Department of Tourism, Heritage and Culture

Economic Function: Culture and Recreation

Heritage Branch

The Branch

- Co-ordinates and develops heritage policies and programs in Yukon.
- Develops policies and programs for local museums support and development.
- Identifies, develops and manages territorial historic sites.
- Operates the territorial Art Gallery.
- Regulates scientists and explorers and archaeological activity in Yukon.

Program Highlights for 1983-84

- Historic building in Fort Selkirk and Dawson City were stabilized.
- Six local museums we given $120,000 for capital and operational requirements.
- Heritage Policy Paper was released in September. Related public meetings were held in 10 communities in February.
- The Permanent Collection and Art Bank acquired 24 art works.

Objectives for 1984-85

- Complete a heritage policy review.
- Develop Yukon Toponymic Program.
- Implement the Beaufort heritage survey and assessment program.
- A Museums Advisor will be recruited and in place by April 1984.
- Structures stabilization at five historic sites will continue.
- The Art Gallery will organize two special exhibitions for 1984 - Year of the Arts.

Tourism Planning and Development Branch

Economic Function: Economic Development - Other

The Branch is responsible for coordination with industry in the areas of planning; i.e., developing tourism strategies and development of tourism attractions and related infrastructure.

The Branch was also responsible for the implementation of the Canada-Yukon Tourism Agreement (CYTA), a $6 million, three-year tourism development program which concluded in March 1984. Yukon contributed $900,000 to this joint program with the balance provided by the Federal Government. All CYTA projects are now complete, and an evaluation of the entire program is underway.

Projects successfully completed under CYTA include:

In Dawson:

- Construction of new Downtown Hotel
- Expansion of Triple J Cabins Motel
- Construction of new Visitor Receiption Centre with an historic design
- Construction of historic facades on twenty buildings
- Construction of pedestrian boardwalks throughout the downtown area
- Renovation/expansion of Diamond Tooth Gertie's Gambling Casino

In Whitehorse:

- Restoration of Old Log Church
- Renovation of Visitors Reception Centre
- Development of Guild Hall Society theatre

Other Projects include

- Assistance for lunch/theatre program in Carcross
- A new Visitor Reception Centre in Carcross
- Development of Alaska Highway Interpretive Centre in Watson Lake
- Provision of financial assistance for three wilderness adventure guided tour companies

A number of reports and studies were produced by the research and planning program. These include:

1982 Visitor Exit Survey
Kluane Region Tourism Development Plan
Wilderness/Adventure Travel Industry Analysis
1983 Coupon Conversion Market Research

Branch programs, other than those included under CYTA, include the continuing placement of "point of interest" signs along Yukon highways.

Throughout 1983/84, the Branch co-ordinated, with the federal Dept. of Regional Industrial Expansion, implementation of the Tourism and Small Business Incentives Program, a one-year interim financial assistance program designed to fill the gap between CYTA and a longer-term General Development Agreement. TSBIP assisted many significant tourism projects, including reconstruction of the Midnight Sun restuarant/hotel (which burnt down in 1982) in Dawson City, development of major new campgrounds in Dawson and Whitehorse, expansion of two hotels in Watson Lake, and development or improvement of several wilderness travel services.

Tourism Marketing Branch

The objective of the Branch is to develop visitor traffic to Yukon.

In 1983, 394,000 visitors to Yukon spent an estimated $77 million. 1983 saw the largest number of annual border crossings ever recorded. Of these 61% came from the United States, 30% from other parts of Canada and 9% from overseas.

Highway traffic via motorcoach and personal vehicle accounted for 86% of all visitors, the highest proportion ever recorded. Air traffic decreased by 17%.

In 1983, over 80,000 inquirers for Yukon travel information were sent the Yukon travel guide, "Yukon - You're More Than Welcome". An additional 120,000 guides were distributed through automobile associations, travel agents, tour operators, Tourism Canada, hotels and travel information centres within and outside of Yukon. A total of 20,000 Yukon Travel Agents Manuals were distributed to tour operators, travel agents and airlines and to fulfill direct inquiries.

To further promote travel to Yukon, 135 travel influencers from nine countries visited the territory including 2 tour operators, 70 travel agents and 63 writers and TV film crew members. Eight 60-second TV vignettes were produced on Yukon and its people and are being used as fillers or Public Service Announcements on 72 TV stations across Canada and are also being distributed throughout the U.S.A.

Two travel brochures were produced; one in French, the other in German.

The Yukon Cooperative Tourism Marketing Committee, which includes representatives from industry and government, continued as the central marketing coordination agency guiding the ongoing joint marketing program with the State of Alaska, travel agents promotions and overseas marketing.

Plans 1984-85

A 16 mm Yukon travel film for distribution world-wide throughout Tourism Canada and the National Film Board offices will be completed.

Increased publicity will be given to outdoor adventure in four different regions of Yukon.

The Japanese market for the Yukon tourism product will be developed.

Recreation Branch

Economic Function: Culture and Recreation

A new Recreation Act and Public Lotteries Act passed in the Fall session of the Legislative Assembly resulted from a two-year public recreation review process. The new Recreation Act provides for an expanded mandate and increased resources at the community level and provides new support to territorial arts and sports programs.

The 1984 Arctic Winter Games saw 300 Yukon athletes, coaches and officials compete in this eighth biennial transarctic event held in Yellowknife, N.W.T. Yukon won the Stewart Hodgson Trophy for the most sportsmanlike contingent for the third consecutive time.

The seventh annual recreation seminar provided recreation volunteers from across Yukon with information related to the new Recreation Act.

Twenty-three territorial sport organizations received approximately $190,000 in assistance for administration, training and competition. Territorial arts and special recreation groups received $65,000 in assistance for administration and various developmental programs.

The Recreation Branch's new advanced artist development grant program funded six visual and performing artists. The elite athlete assistance grant helped six athletes eight Yukoners placed in the top 3 of various National Competitions.

Yukon communities were provided $120,000 in assistance for community based recreation sport and arts activities. The Summer Pool Program ran in nine communities across Yukon. Responsibility for this program, like many other recreation services, has been gradually turned over local communities.

The Yukon Lottery Commission with administrative support from the Recreation Branch provides $70,000 to various special sports and arts projects. Communities were provided with $38,000 of discretionary funding.

For the first time, Yukon sent its best weightlifters and boxers to the Western Canada Games. Yukon fared well in this pre-olympic competition, bringing home two gold medals.

With Recreation Branch support, Yukoners participated in:

- Northern B.C. Winter Games
- Canadian Heritage Festival
- World Universiade Torch Relay
- National Physical Activity Week
- Canada Fitness Awards
- Canada Fitness Awards
- Fitness Leader Training

Department of Economic Development

Economic Function: Economic Development - Other

The Department is responsible for coordinating the formulation, development and implementation of short medium and long term economic development strategies plans and programs for Yukon. These responsibilities are discharged by a number of Branches, the activities of which are described below.

Economic Research and Planning Branch

The Economic Research and Planning Branch has responsibility in a broad range of areas, including: Mineral Development, Business and Industrial Development, Economic Research, Economic Development Planning, and Statistics. Goals are:

1. To develop the capability to assume full responsibility for the planning, management, and development of non-renewable resources.
2. To promote, enchance and diversify business and industry in all sectors of the economy.
3. To formulate policies and programs which will stimulate economic growth and development.
4. To develop and co-ordinate a comprehensive economic development strategy and planning process required to ensure orderly development and diversification of the economy.
5. To provide a complete socio-economic research and analytical support service to Government.
6. To provide full statistical services to the public and private sectors.

Mineral Development

The Mineral Development group undertook a comprehensive evaluation of the new regulatory regime for the placer mining industry. The project included the preparation in co-operation with Renewable Resources, of a Position Paper which formed the basis of the Government of Yukon's intervention before the Yukon Placer Mining Guidelines Public Review Committee in September. Stemming from that Position Paper and the resultant Review Committee's report, there have been continuing discussions with the Federal Government and with the industry concerning the development of an equitable regulatory regime for the Territory in concert with increased research and development into the Placer Mining industry. Two major studies intended to provide further data on the placer mining industry were developed during the past year, and will be implemented in the 1984/85 fiscal year.

Other projects undertaken during the year by the Mining group included:

(a) A proposal to protect the northern Yukon source of Lazulite, Yukon's official gemstone.
(b) A draft discussion paper on the Yukon Resource Development Policy.
(c) A discussion paper on mineral development in Yukon for the third National Workshop on People. Resources and the Environment north of 60°.
(d) Preparation of a draft Canada/Yukon Agreement on Mineral Development.
(e) Preparation of a Regional Resource Roads Policy including proposed program for construction of selected regional resource roads.
(f) Participation with the Federal Government on a number of major committees intended to provide mechanisms for solving the present problems of Canada's mining industry.

Business and Industrial Development
In 1983/84, the Branch prepared a comprehensive Business Development Assistance Program for small business. This program provided a broad range of initiatives including business marketing and promotion, business advisory services, and a series of financial incentives. In co-operation with the Yukon Chambers of Commerce and the City of Whitehorse, a number of business marketing activities were undertaken during the fiscal year, and the Government of Yukon provided $500,000 in the Capital Budget for use in providing financial incentives to Yukon's small business community. The addition of new staff to the Business and Industrial group provided the opportunity for initiating a strong business advisory service for the Territory during the last three months of the fiscal year.

A number of projects were undertaken by the Business and Industrial Development group including:
(a) The provision of business assistance to 28 small business entrepreneurs during the first three months of 1984.
(b) *Initiation of a Major Adversting Campaign:* Based on the theme "Yukon: We Mean Business", an advertising campign was run in six publications across Canada including the "Financial Post" and the magazine "Canadian Business".
(c) *Involvement in Trade Shows and Trade Missions:* The group actively participated in a number of trade shows and business promotion tours throughout Western Canada. The Business and Industrial Development group travelled to Calgary and Vancouver on a major tour in February, 1984 and was involved in the Whitehorse Trade Show.
(d) *Publication and Distribution Worldwide of the 1984 Business Directory:* Approximately 1,500 copies were distributed throughout Western Canada and Alaska.
(e) Acquisition of a thirteen-film series entitled "How to Start a Business".
(f) Preparation of an audio-visual presentation entitled "Whitehorse: City of the Future with a Golden Past".

Economic Research
The Economic Research and Planning Branch undertook a variety of economic research activities during the past fiscal year. These activities included:
(a) An economic forecast of Yukon's economy entitled "Economic Growth in Yukon 1983 to 2003".
(b) A study on the desirability of a wine and liquor bottle return system in Yukon.
(c) The Yukon Economic Model.
(d) Development of an Input/Output Table for Yukon.
(e) Short term economic forecasts on Yukon's economy.
(f) Study on the viability of a regional air system for Yukon.
(g) Preparation of a brief to the Air Transport Committee on the desirability of de-regulation of the airline industry in Canada.

Economic Development Planning
As part of its mandate to develop new concepts for enchancing Yukon's economic development potential, the Economic Research and Planning Branch undertook a variety of activities during the past fiscal year. In particular, the Economic Research and Planning Branch undertook to prepare an Economic Development Strategy for Yukon in the 1980's which was used as part of the negotiations for the new Economic Development Agreement. In addition, the Branch prepared, in co-operation with various Yukon Government Departments, a broad range of proposals to be included as part of the Economic Development Agreement. Proposals were prepared in the areas of tourism and business development, renewable resources, human resources development, mineral and energy development, and community development. In total, the planning program outlined by the Branch included initiatives totalling over $54 million. These, in large part, form the basis for the successful negotiation of the Economic Development Agreement, for which the Branch was responsible. Other economic development planning activities included the preparation of background material for use in the Canada Transport Committee inquiry into Yukon's transportation system, and initial investigation on the development of an air policy for Yukon.

Statistics
The Statistical Services group provide a broad range of statistical information and advice to the Government of Yukon and the public at large. In the past fiscal year, the Statistical Services group has provided statistical advice and information to over 1,200 interested individuals. In addition, the group undertook a variety of data development activities including:
Re-design of the Labour Force Survey, Demographic Research on the Health Care Record File, initiation of a process to develop a standardized set of economic accounts, development of a Community Profile for Yukon, and initiation of a project to provide an annual Statistical Review for Yukon. In addition, the group continued to disseminate a broad range of information including the Yukon Economic Review, the 1981 Census Summary, the Revenue Canada Statistical Summary and the 1983 Spatial Price Survey. Finally, the group provided technical advice and assistance to Departments and individuals on various aspects of statistical analysis.

Responsibilities
Energy Branch has been responsible for developing energy policy for the Yukon Government; developing and implementing CREDA, Yukon ECIP, Special ARDA; and developing new programs. Upon the cessation of bilateral funding on April 1, 1984 these programs will end.

Review 1983-84
During 1983/84 the Energy Conservation Incentive Program (ECIP) was particularly active completing 60 audits. Total costs of audit recommendations was $1.2 million. Total Incentive grants approved was $371,500. Total annual energy savings from implementing recommendations was $325,000. Under the Conservation and Renewable Energy Demonstration Program (CREDA) two projects with a total grant contribution of $170,750 were approved during the year.

Special ARDA,[1] in its final year helped fund 17 projects contributing $209,000 to the $309,000 total project costs.

[1] Agricultural and Rural Development Agreement

Plans 1984-85
The Energy Branch will continue its work on Energy Policy development. This year the Energy Branch will be administering and delivering Yukon programs as opposed to bilateral programs. Three new programs will be undertaken: Internal Energy Management Program; Yukon Energy Alternatives Program (YEAP); and Saving Energy Action Loan (SEAL).

The Internal Energy Management Program will see Energy Branch Staff, acting as resource personnel, help to meet government energy conservation objectives. YEAP is designed to assist the identification of alternative energy options for Yukon communities and industries. SEAL is designed to act as an incentive for homeowners who wish to upgrade their residences from a energy conservation point of view.

Major Projects Branch

The Major Projects Branch, established in 1983, co-ordinates Yukon Government activities related to major project development in northern Canada, and provides a communications link with industry.

Review 1983-84
Branch activities during the year under review included:

- Coordination of the Yukon Government's presentations to the Beaufort Sea Task Force and to the North Slope Project Review Committee.
- Preparation for Yukon Government Membership on the Yukon Benefits Committee.
- Coordination of Yukon Government activities vis à vis the Northern Oil and Gas Action Program (NOGAP).

The Branch has been in regular contact with the major Beaufort operators regarding business and employment opportunities for Yukoners, and has acted as a point of contact for industry and other agencies, provide material related to project development to government departments, business organizations and other interested parties.

Plans 1984-85
Projects outlined above will become full-time Branch responsibilities. In the upcoming year, the Canada Benefits Programmes of the oil exploration industry will be reviewed by the Yukon Benefits Committee. This Committee will ensure that a reasonable proportion of industry expenditures are made in the Yukon. The NOGAP research projects will commence about mid-year. Information generated from these projects will enable the Government to plan development phase impacts of Beaufort activities on the Yukon.

Special ARDA

The Special ARDA program, which has been in operation in Yukon since 1978, expired in April 1984. It was designed to improve the standard of living and to create new opportunities for increased income and employment of people in rural areas, particularly those of native ancestry.

Activity to year end

Projects funded:	131
Funding committed:	$4.7 million
Job created:	340
Wage income generated:	$8 million

Yukon Workers' Compensation Board

Economic Function: General Government Services

Responsibilities
The Workers' Compensation Board administers the Workers' Compensation Act and adjudicates all matters arising under that Act. The Board guarantees that compensation and pensions awarded to injured workers or their dependants be paid for as long as they are entitled to receive these benefits.

In co-operation with the Yukon Department of Justice, the Workers' Compensation Board administers the compensation under the Victims of Crime Act, to ensure that victims of crime or their dependants who are faced with financial difficulties as a direct result of a criminal incident receive any compensation to which they are entitled.

Review 1983
A total of 1059 claims were reported during 1983 as compacted to 1354 in 1982. Increases resulted from Section 79 of the Act which increases the amount of compensation in accordance with changes in the Consumer Price Index. The amount of the increase at January 1, 1983, was 10.8%. During 1983, 1545 employers established accounts.

The Workers' Compensation Act was amended by the Legislative Assembly in 1982 effective January 1, 1983. The major amendments are:

- Changes in the system of pensions to nominal lump sums related to the severity of the permanent handicap, annual review of the actual earning power and compensation based on the actual loss of earnings, to age 65.
- Provision of an annuity at age 65.
- Changes in the claim appeal procedures to assure impartiality and a more thorough review of all evidence.
- Increase in pensions to dependant widows and widowers to $165 from $144 per month.
- The appointment of a full-time Chairman and two part-time members rather than as previously, a part-time Chairman and three part-time members.
- Independant operators and directors of limited companies may make application for personal coverage on a voluntary basis.

Workers' Compensation Legislation

The Workers' Compensation Act was amended by the Legislative Assembly in 1982 effective January 1, 1983.

Major Amendments

- The system of pensions based on clinical evaluation of disablement in percentage terms was abandoned in favour of a two phase approach. The first phase provides nominal lump sums related to the severity of the permanent handicap. The second phase is that the actual earning power is to be reviewed annually and compensation be based on the actual loss resulting from the injury, to age 65.

- An annuity at age 65.
- Changes in the claim appeal procedures, which assures a more thorough review of all evidence and assures the worker of impartiality.
- Pensions to dependant widows and widowers were increased to $650 from $438 per month.
- Pensions to dependant children were increased to $165 from $144 per month.
- The appointment of a full-time Chairman and two part-time members. This was a change from the previous practice of having a part-time Chairman and three part-time members.
- Independant operators may make application for personnal coverage on a voluntary basis.
- Directors of limited companies rendering a service to the corporation may make application for personnel coverage on a voluntary basis.

Assessments

During the year, 1,545 employers established accounts compared with 2,061 during the year 1982. Provisional figures indicated an assessable payroll at $182,698,000.

The maximum assessable earnings was $25,000 per annum. The minimum coverage available to proprietors, members of their families and to members of partnerships was $7,000 per annum.

Increased Benefits

Benefits increase at January 1, 1983 was as follows:

- Lump sum payments to dependant widows or widowers who remarry were increased to $6,111 from $5,515.
- Payments to dependant widows or widowers for additional expenses resulting from the death of a worker were increased to $1200 from $1101.
- Payments for necessary burial expenses were increased to $1,397 from $1,261.
- Payment for transportation of body was increased to $247 from $223.
- Existing pensions for permanent disability were increased by 10.8 percent.

Claims

The number of claims reported to the board during 1983 was 1,059 compared with 1,354 during the year 1982.

There was one compensable fatal accident during 1983, compared with seven during 1982.

Appeals

The Board heard 86 appeals while 21 cases were referred under Section 22.

Yukon Housing Corporation

Economic Function: General Government Services

Highlights 1983-84

The Corporation acts as the housing agency for the Yukon Government. As a crown corporation, with a Board of Directors, it administers government programs and funds to improve housing conditions for all Yukoners. Major activities involve the supply and management of housing for low-income families, senior citizens and Government of Yukon employees.

During the past year of operation the Corporation took a number of steps to improve its programs and housing portfolio. The rental policies for both the public and employee housing programs underwent major adjustments, resulting in a more equitable and standardized rental policy for all tenants. The Corporation's five-year program to reduce energy consumption is in its fifth year of operation. During the year 63 units were upgraded under the Federal C.H.I.P. and C.O.S.P. programs. An additional 51 units were upgraded under the Federal Energy Management Off-Oil Program.

During the summer, a number of construction projects were carried out. Foundation upgrading work was completed on 6 single detached units in Dawson, six units in Ross River and eight units in Faro. In the first year of the Dawson historic facade program, four single detached units were upgraded to meet the local historic building standards.

A new 4-Plex senior citizens' structure was completed in Dawson in early September, which met energy efficient and handicapped livability standards. In Whitehorse, a recreation centre was completed for the residents of Greenwood Place, a 36-unit senior citizens project.

The Corporation began a massive fencing and landscaping program for its single and multi-unit housing structure in a number of communities.

Under the Yukon Conservation and Renewable Energy Demonstration Agreement (C.R.E.D.A.), the Corporation provided project management services to assist senior citizens to improve the energy efficiency of their homes. In conjunction with this program the Corporation carried out energy retrofit work to the Alexander St. Residence, in Whitehorse.

Yukon Liquor Corporation

Economic Function General Government Services

Responsibilities

The Yukon Liquor Corporation regulates, imports, distributes and retails alcoholic beverages within Yukon and ensures that the requirements of the Liquor Act, and regulations are met.

The Liquor Board granted four new Restaurant Wine and Beer Licences, one Tavern Licence, three Dining Room Licences, two Liquor Mess Licences and one Cocktail Lounge Licence. Interim liquor licences were granted to three establishments under receivership.

The Corporation suspended liquor licences of two establishments for infractions of the Liquor Act and Regulations, and cancelled two Special Occasion Permits during the year.

Liquor Sales Throughout Yukon Including Surcharge

	1983-84	*1982-83*
Spirits	$ 5,978,457	$ 6,101,352
Wine	2,081,680	2,117,637
Beer	6,854,008	6,826,477
Total	$14,914,145	$15,045,466

Liquor consumption amounted to 786,461 gallons in comparison to 819,925 gallons during the year 1982-83.

Licensing and Inspection

	1983-84	*1982-83*
Spirits	277	267
Wine	588	519
Beer	122	134
Other	9	4
Total Licences & Permits	996	924

The Concept of the Annual Northern Expenditure Plan

Introduction

Federal departments and agencies and the governments of the Yukon and Northwest Territories are surveyed each year to obtain information regarding their recent and proposed annual expenditures on programs and activities in or for the two territories. In the aggregate, the expenditure data thus collected constitute the northern expenditure plans of the federal and territorial governments.

Policy Framework for Northern Expenditure Planning

In 1971 the government of Canada approved a northern development policy that established seven national objectives for northern Canada. These objectives were designed as a policy framework for the formulation, coordination and implementation of all federal and territorial government programs concerned with northern Canada, and to provide a common basis for federal and territorial governments to plan and implement their northern programs. At the same time, they present a special challenge in joint planning and coordination among the three governments involved, given the multiplicity of departments and agencies through which each government discharges its responsibilities north of 60°. Accordingly the preparation of an annual northern expenditure plan was undertaken to facilitate a co-ordinated and balanced approach to allocation of the human and financial resources of government in relation to the government's northern objectives.

Scope and Nature of the Data Survey

Geographical Area and Time Frame

The terms north, northern and north of 60° refer to the Yukon and the North-west Territories: Expenditures north of 60° relative to Arctic Quebec and Labrador are not included in the data.

Agencies* were asked to provide data for a four-year period: planned expenditures for 1984/85, forecast expenditures (at the time of the survey) for 1983/84 and actual expenditure for 1982/83 and 1981/82. It is important to note that the data for 1984/85 are based on expenditure plans contained in the Main Estimates published by the federal and territorial governments for that year; as such, they represent spending plans that are subject to change in response to shifts in priorities.

Nature of Data Included in the Survey

To ensure maximum reliability in the data, agencies were asked to report only direct northern expenditures. Direct expenditures are (a) those that take place physically north of 60°; (b) those made to achieve departmental or program objectives exclusively for the North; or (c) those that contribute to northern objectives or involve the North in a national program, provided that the northern component of the expenditure can realistically be identified.

The annual northern expenditure plan includes territorial government expenditures under hospital and medical care insurance plans as well as federal government expenditures for providing health services in the North. A portion of the federal expenditures is financed through amounts received from the territorial insurance plans and, as such, there is some overlap in the data.

It should be noted that an element of judgement had to be applied in making the allocation of expenditures by northern objective. By its nature, this data category is subjective. For this reason, agencies surveyed were urged to seek advice from senior-level program managers to obtain the best judgement possible in these areas.

Exclusions from the Survey Data

While the annual northern expenditure plan represents the most comprehensive data available on government spending in the North, some federal agencies have been excluded from the survey even though they may operate northern-related programs. This is because data on indirect expenditures — that is, those which may contribute to northern objectives, but which have a primary thrust directed elsewhere and a northern component which cannot firmly and realistically be identified — are not included in the survey.

The expenditures of certain agencies whose operations are considered to be "special items" are excluded from the data tables. These special items include (a) forces of the Department of National Defence assigned for defence of the North but stationed in southern Canada (a relatively high expenditure); (b) payments to agencies whose operations are of a quasi-commercial nature, namely to the Northern Transportation Company Limited by Transport Canada and to the Northern Canada Power Commission by the Department of Indian and Northern Affairs (loans for capital expenditures and advances for working capital); and (c) activities reported as long-range research (because the application of research results is expected to be at least two years away).

Information on the expenditures and operations of these agencies is presented in summary form in appendices 1 and 2 to this document.

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* The term "agency" (when not otherwise modified) includes federal government departments, agencies and Crown corporations, and the governments of the two territories.

Adjustments for Inter-agency Transfers

An inter-agency transfer takes place when funds are provided by one reporting agency to another without the recipient agency providing any goods or services to be used or consumed by the agency providing the funds. The recipient agency is thus free to administer the disposition of funds for their intended purpose. The most common forms of such inter-agency transfers are grants, contributions or loans.

The Annual Northern Expenditure Plan is designed to indicate northern expenditures by the agency that has final responsibility for managing them. This means that transfers from one agency to another appear as the expenditure of the agency that ultimately disburses the funds.

Adjustments for Inter-Agency Sales and Purchases

Limitations in financial accounting systems make a certain amount of double counting unavoidable. Such double accounting occurs when one agency purchases goods or services from another agency and includes the purchase cost in its reported expenditures while, at the same time, the selling agency reports the cost of providing the goods or services as part of its expenditures.

Since the purchasing agency obtains the goods or services in order to carry out its programs and to promote certain northern objectives, the cost should be included in its expenditures by northern objective, and economic function. However, since the selling agency actually administers the expenditure in providing the goods or services, it is most appropriate that the cost be included as part of its reported expenditures by object of expenditure.

In line with this approach, sales to other agencies were deducted from the selling agency's gross expenditures in compiling the tables showing allocations by northern objective, and economic function.

Adjustments to Data Previously Reported

For a number of reasons, data for the years prior to 1983/84 may differ from the data in previous annual northern expenditure plans. Planned data for a given year are derived from the Main Estimates, which are spending plans subject to change because of shifts in priorities. Planned data become forecast data the following year and are revised up to the time of the survey. Forecast data become actual data the following year, and in so doing, may change. In addition, some actual and forecast figures are later adjusted for errors, omissions, or agency reorganizations identified since the compilation of the previous year's report.

Interaction of Northern Objectives and Agency Program Objectives

Reference has been made to the value of the annual northern expenditure plan in fostering greater cohesion in northern expenditure planning. The main focus of the plan, of course, is on those activities which contribute to the achievement of the national objectives for northern Canada.

The objectives of governments, however, are multi-faceted, diverse and inter-related. For example, many federal agencies whose activities support established northern objectives have responsibilities for meeting national or program objectives which are distinct from the national objectives for the North. In such cases, flexibility has to be applied in meeting non-northern objectives independent of northern concerns. It is recognized, however, that where the national purpose being served by a given agency or program must take precedence over the implications for northern objectives, the manner in which expenditures are executed may often be modified to enhance achievement of northern objectives without sacrifice to the other purposes being served.

Total Northern Spending

The federal and territorial governments report total planned expenditures of $1,428.6 million for 1984/85 — an increase of $73 million or 5.4% over a recent forecast of total 1983/84 spending.

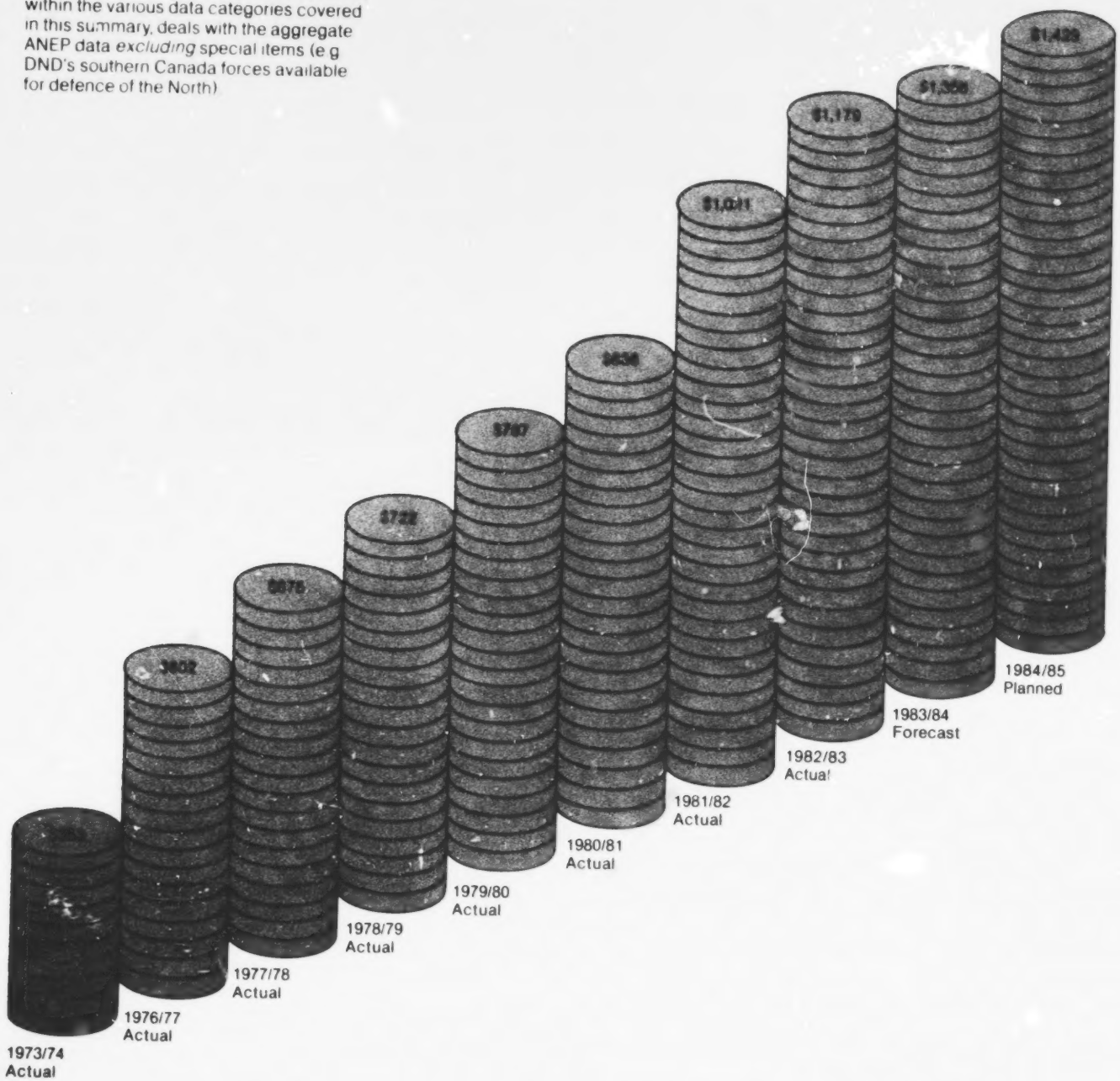
The 1984/85 expenditure plan and trends in northern spending since 1973/74, within the various data categories covered in this summary, deals with the aggregate ANEP data *excluding* special items (e.g. DND's southern Canada forces available for defence of the North).

The graphic below indicates the trend in annual northern expenditures since 1973/74, showing the percentage change from year to year.

The increase for 1984/85 on a *plan-to-plan* basis is 12.8%.

Total Northern Spending ($ millions) 1973/74 to 1984/85

Current Dollars



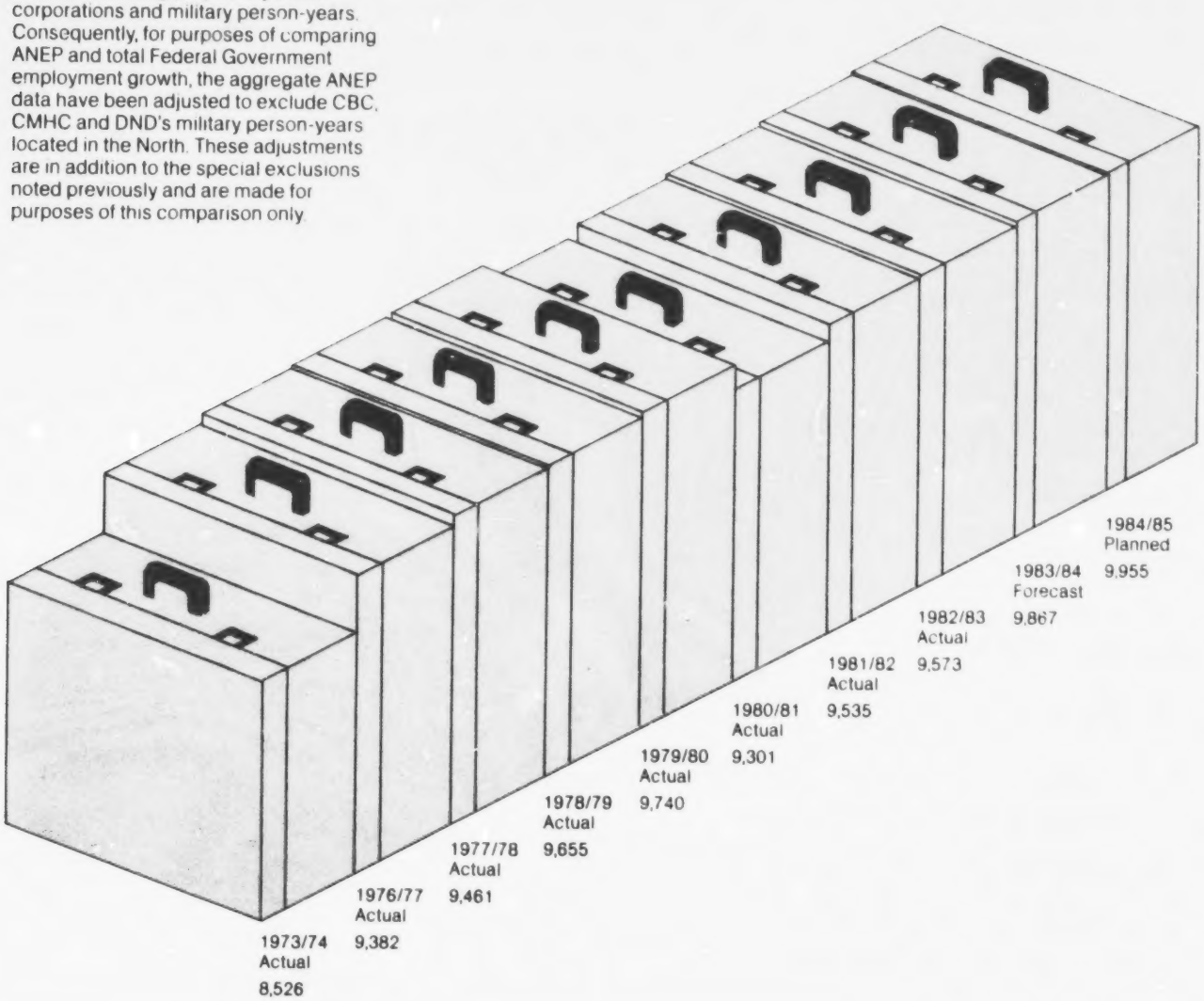
Total Northern Employment

The federal and territorial governments plan to utilize 9,955 person-years in 1984/85 with respect to northern-related programs and activities — an increase of 83 person-years or 0.9% from a recent forecast of manpower utilization for 1983/84.

Total Federal Government employment comprises the personnel resources of departments and agencies which are subject to Treasury Board control, excluding proprietary crown corporations and military person-years. Consequently, for purposes of comparing ANEP and total Federal Government employment growth, the aggregate ANEP data have been adjusted to exclude CBC, CMHC and DND's military person-years located in the North. These adjustments are in addition to the special exclusions noted previously and are made for purposes of this comparison only.

The person-years reported for special items which are excluded from the aggregate employment data pertain to DND's southern Canada forces and various Long-Range Research activities.

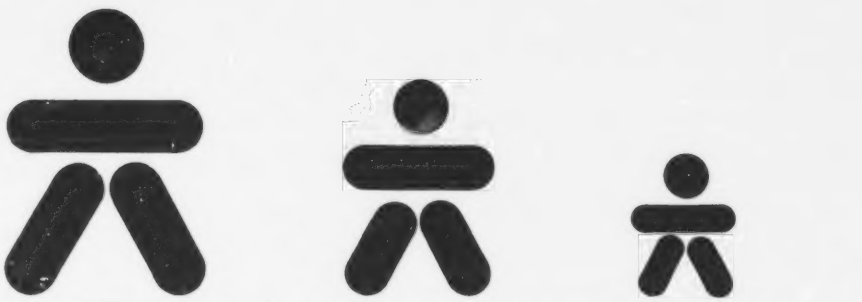
The employment levels associated with NCPC and NTCL are not reported in the ANEP as special items or otherwise. See Appendices 1 and 2 for information in this regard.



Total Northern Employment (Person-Years) — 1973/74 to 1984/85

Employment by Agency

The following chart illustrates the distribution of the total 1984/85 planned employment level between the federal and territorial governments and shows how the federal share is divided among the major federal agencies.



Total Employment: 9,955

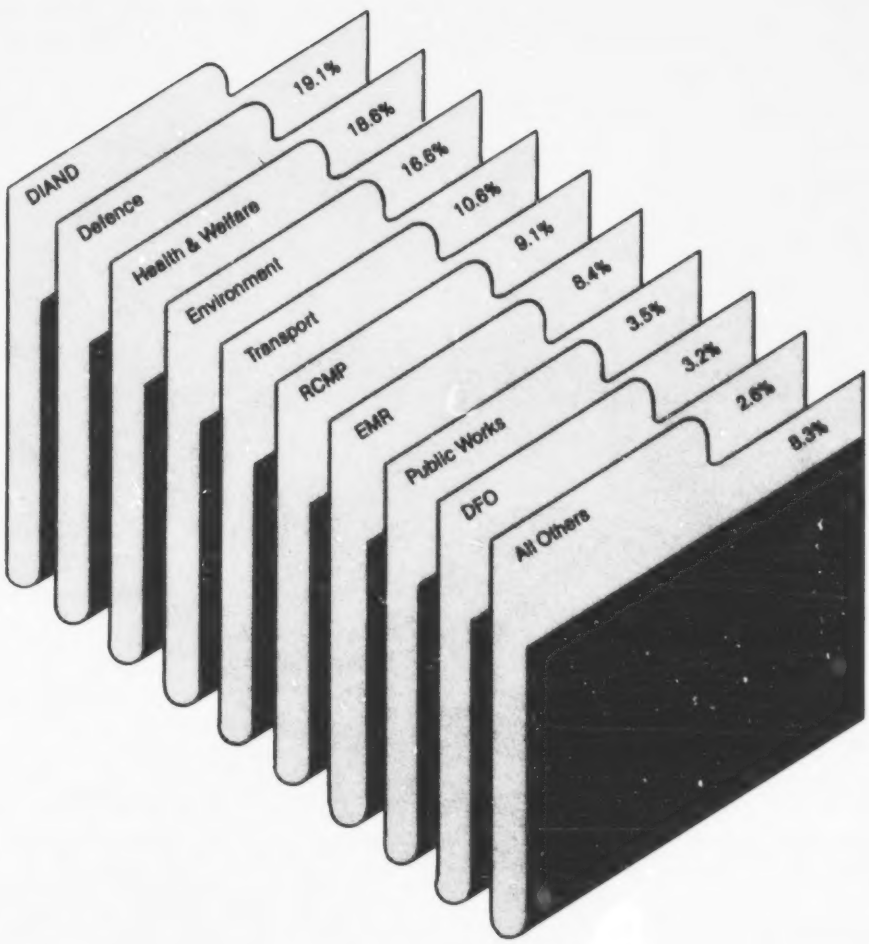
Federal Government 4,905

Government of the Northwest Territories 3,578

Government of the Yukon Territory 1,472

Planned Employment (Person Years) for 1984/85 by Level of Government and Major Federal Agency

The agency manpower levels reported for 1973/74 and 1981/82 to 1984/85, with the distribution of total employment in each year, are shown in the table below. Figures represent actual utilization for 1973/74, 1981/82 and 1982/83, a recent forecast for 1983/84 and the planned or authorized person-years for 1984/85.



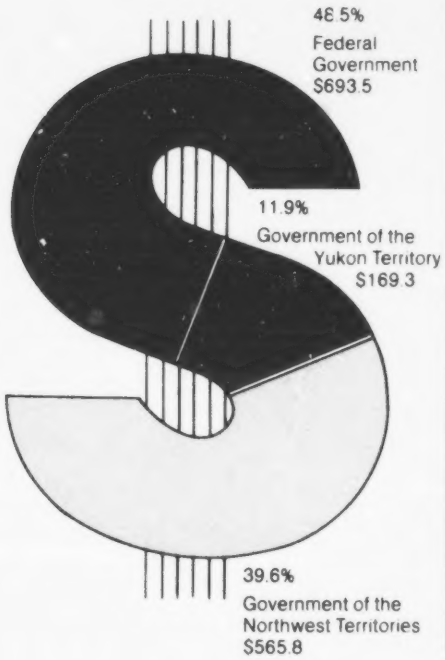
Trend in Employment (Person-Years) and Percentage Distribution (%) by Agency

Agency	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
Federal	#	%	#	%	#	%	#	%	#	%
DIAND	906	*20.2*	869	*17.9*	908	*19.2*	914	*18.7*	939	*19.1*
Defence	995	*22.2*	859	*17.6*	786	*16.7*	932	*19.1*	910	*18.6*
Health & Welfare	780	*17.4*	845	*17.3*	845	*17.9*	791	*16.2*	815	*16.6*
Environment	397	*8.8*	451	*9.3*	472	*10.0*	492	*10.1*	519	*10.6*
Transport	407	*9.1*	444	*9.1*	431	*9.1*	447	*9.2*	447	*9.1*
RCMP	259	*5.8*	384	*7.9*	407	*8.6*	413	*8.5*	414	*8.4*
EMR	210	*4.7*	177	*3.7*	170	*3.6*	178	*3.7*	173	*3.5*
Public Works	170	*3.8*	173	*3.6*	164	*3.5*	152	*3.1*	156	*3.2*
Fisheries & Oceans	94	*2.1*	100	*2.1*	122	*2.6*	137	*2.8*	125	*2.6*
Post Office	106	*2.3*	112	*2.3*	120	*2.5*	120	*2.5*	120	*2.5*
CEIC	39	*0.9*	114	*2.3*	127	*2.7*	130	*2.7*	119	*2.4*
PSC	-	-	83	*1.7*	81	*1.7*	81	*1.7*	81	*1.7*
Justice	8	*0.2*	17	*0.4*	22	*0.5*	21	*0.4*	21	*0.4*
CMHC	5	*0.1*	16	*0.3*	14	*0.3*	16	*0.3*	16	*0.3*
Revenue	16	*0.4*	15	*0.3*	15	*0.3*	16	*0.3*	16	*0.3*
Communications	10	*0.2*	11	*0.2*	14	*0.3*	13	*0.3*	12	*0.3*
RIE	-	-	6	*0.1*	6	*0.1*	8	*0.2*	8	*0.2*
Museums	-	-	8	*0.2*	10	*0.2*	7	*0.1*	6	*0.1*
Sec. of State	-	-	-	-	4	*0.1*	4	*0.1*	5	*0.1*
Labour	-	-	2	*0.0*	2	*0.0*	2	*0.0*	2	*0.0*
Nor Pipeline Agency	-	-	4	*0.1*	4	*0.1*	2	*0.0*	1	*0.0*
CBC	83	*1.8*	179	*3.7*	-	-	-	-	-	-
Veterans' Affairs	-	-	-	-	-	-	-	-	-	-
Finance	-	-	-	-	-	-	-	-	-	-
Fed. Judicial Affairs	-	-	-	-	-	-	-	-	-	-
Total	4,485	*100.0*	4,869	*100.0*	4,724	*100.0*	4,876	*100.0*	4,905	*100.0*
Federal	4,485	*52.6*	4,869	*51.1*	4,724	*49.4*	4,876	*49.4*	4,905	*49.3*
NWTG	2,803	*32.9*	3,155	*33.1*	3,411	*35.6*	3,544	*35.9*	3,578	*35.9*
YTG	1,238	*14.5*	1,511	*15.8*	1,438	*15.0*	1,447	*14.7*	1,472	*14.8*
Total	**8,526**	***100.0***	**9,535**	***100.0***	**9,573**	***100.0***	**9,867**	***100.0***	**9,955**	***100.0***

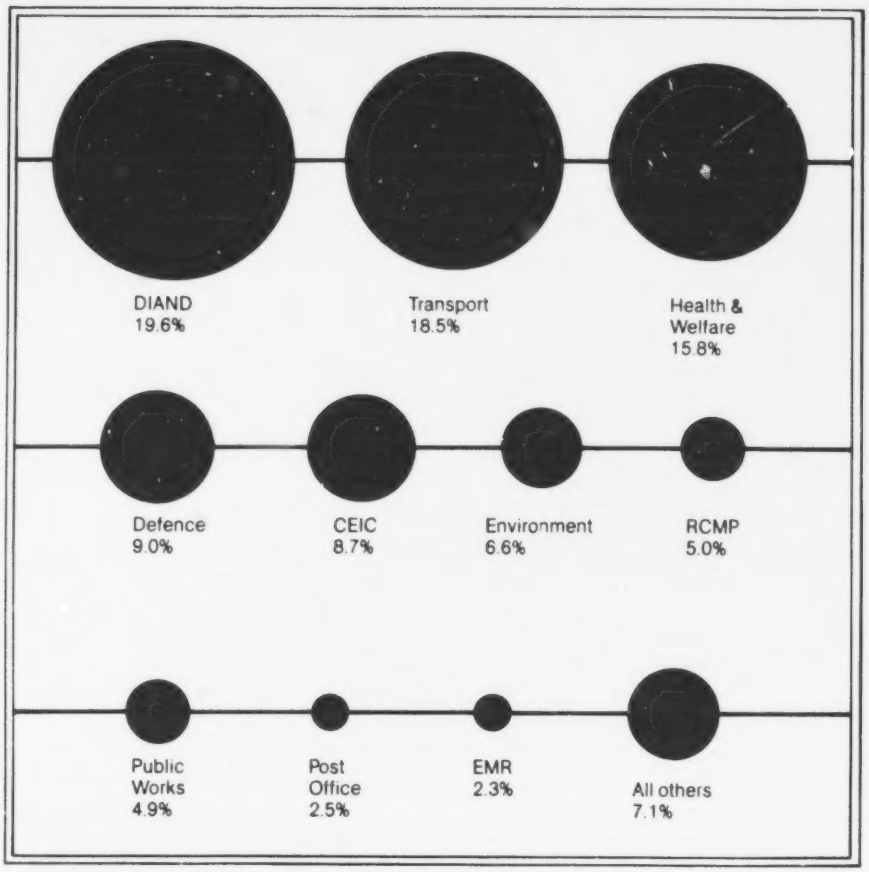
Expenditure by Spending Agency

The chart below displays the federal and territorial governments' shares of the total $1,428.6 million planned for 1984/85 and shows how the federal share is distributed among the major federal agencies.

Total Spending: $1,428.6



Planned Expenditure ($ millions) for 1984/85 by Level of Government and Major Federal Agency



Federal Spending: $693.5

The following table shows the trend in expenditures by reporting agency and government for 1981/82 to 1984/85 and enables comparison with the base year 1973/74. The figures in italics represent the percentage distribution of the totals. All expenditures are net of transfers, sales and purchases between governments and agencies and are reported according to the agency having the final responsibility for administering the funds.

Trend in Expenditure ($ millions) and Percentage Distribution (%) by Spending Agency

Agency	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
Federal	$	%	$	%	$	%	$	%	$	%
DIAND	67.3	*34.1*	110.8	*22.3*	116.7	*21.0*	136.3	*21.1*	135.7	*19.6*
Transport	26.8	*13.6*	81.4	*16.4*	99.0	*17.8*	109.4	*16.9*	128.0	*18.5*
Health & Welfare	23.1	*11.7*	77.5	*15.6*	91.5	*16.4*	97.3	*15.0*	109.6	*15.8*
Defence	20.2	*10.3*	52.0	*10.5*	55.4	*10.0*	63.6	*9.9*	62.3	*9.0*
CEIC	8.5	*4.3*	24.7	*5.0*	42.4	*7.6*	65.1	*10.0*	60.1	*8.7*
Environment	10.2	*5.2*	32.4	*6.5*	34.0	*6.1*	37.8	*5.9*	45.9	*6.6*
RCMP	6.8	*3.4*	27.9	*5.6*	31.2	*5.6*	32.7	*5.1*	34.7	*5.0*
Public Works	13.0	*6.6*	30.1	*6.1*	24.6	*4.4*	24.1	*3.7*	34.0	*4.9*
Post Office	3.3	*1.7*	8.6	*1.7*	15.2	*2.7*	16.4	*2.5*	17.6	*2.5*
EMR	6.4	*3.3*	13.4	*2.7*	14.0	*2.5*	15.3	*2.4*	15.7	*2.3*
RIE	-	-	5.7	*1.1*	3.9	*0.7*	8.6	*1.3*	14.3	*2.0*
Fisheries & Oceans	2.7	*1.4*	7.0	*1.4*	9.6	*1.7*	9.7	*1.5*	9.2	*1.3*
Sec. of State	1.9	*0.9*	4.7	*0.9*	5.6	*1.0*	7.7	*1.2*	9.2	*1.3*
CMHC	0.5	*0.2*	2.6	*0.5*	5.7	*1.0*	13.8	*2.1*	8.6	*1.2*
PSC	-	-	2.3	*0.5*	2.7	*0.5*	3.4	*0.5*	3.5	*0.5*
Justice	0.2	*0.1*	0.9	*0.2*	1.0	*0.2*	1.1	*0.2*	1.2	*0.2*
Revenue	0.5	*0.2*	0.9	*0.2*	0.9	*0.2*	1.5	*0.2*	1.1	*0.2*
Communications	0.6	*0.3*	0.8	*0.2*	0.9	*0.2*	0.7	*0.1*	0.7	*0.1*
Labour	0.2	*0.1*	0.4	*0.1*	0.6	*0.1*	0.6	*0.1*	0.7	*0.1*
Veterans' Affairs	0.3	*0.2*	0.5	*0.1*	0.5	*0.1*	0.6	*0.1*	0.6	*0.1*
Fed Judicial Affairs	0.1	*0.1*	0.2	*0.0*	0.3	*0.0*	0.4	*0.1*	0.5	*0.1*
Museums	0.2	*0.1*	0.3	*0.0*	0.4	*0.1*	0.3	*0.0*	0.2	*0.0*
Nor Pipeline Agency	-	-	0.3	*0.1*	0.4	*0.1*	0.3	*0.0*	0.1	*0.0*
CBC	3.3	*1.7*	11.4	*2.3*	-	-	-	-	-	-
Finance	1.0	*0.5*	-	-	-	-	-	-	-	-
Total Federal	197.1	*100.0*	496.8	*100.0*	556.5	*100.0*	646.7	*100.0*	693.5	*100.0*
Federal	197.1	*55.8*	496.8	*48.7*	556.5	*47.2*	646.7	*47.7*	693.5	*48.5*
NWTG	115.4	*32.7*	397.0	*38.9*	480.4	*40.7*	539.0	*39.8*	565.8	*39.6*
YTG	40.7	*11.5*	127.2	*12.4*	142.2	*12.1*	170.1	*12.5*	169.3	*11.9*
Total	**353.2**	***100.0***	**1,021.0**	***100.0***	**1,179.1**	***100.0***	**1,355.8**	***100.0***	**1,428.6**	***100.0***

Expenditure by Northern Objective

Expenditure data by Northern Objective are based on the informed judgements of reporting agencies. Also included are amounts which are considered to fall under the category of Administration and Support and which are not, therefore, allocated to specific objectives.

Following is a brief description of the National Objectives for Northern Canada approved by the Federal Government in 1971:

1 *Quality of Life* — To provide for a higher standard of living, quality of life, and equality of opportunity for Northern residents by methods which are compatible with their own preferences and aspirations.

2 *Economic Growth* — To encourage viable economic development within the regions of the Northern Territories so as to realize their potential contribution to the national economy and the material well-being of Canadians.

3 *Sovereignty and Security* — To maintain Canadian sovereignty and security in the North.

4 *Protection of Environment* — To maintain and enhance the Northern environment with due consideration to economic and social development.

5 *Evolution of Government* — To further the evolution of self-government in the Northern Territories.

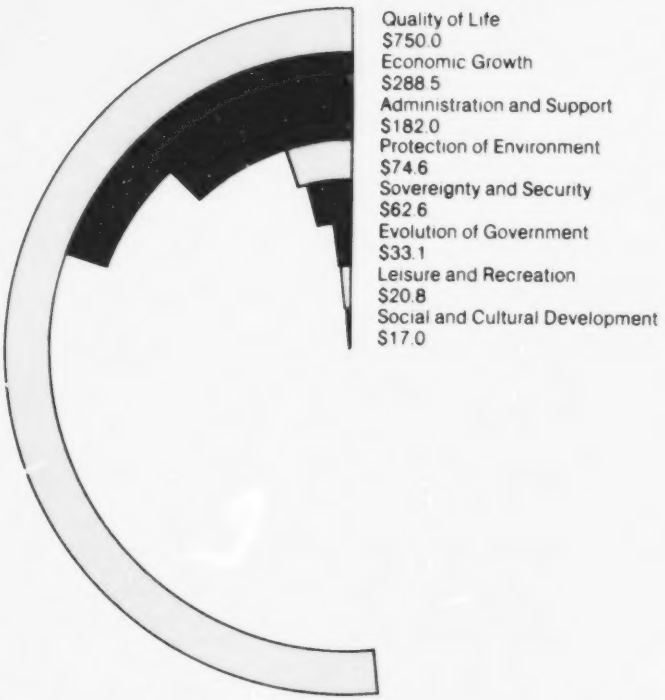
6 *Social and Cultural Development* — To realize the potential contribution of the Northern Territories to the social and cultural development of Canada.

7 *Leisure and Recreation* — To develop fully the leisure and recreational opportunities in the Northern Territories.

The chart below shows how the total planned expenditures for 1984/85 are distributed among the Northern Objectives, based on the allocations reported for each ANEP activity.

Planned Expenditure ($ millions) for 1984/85 by Northern Objective

Total Spending: $1,428.6



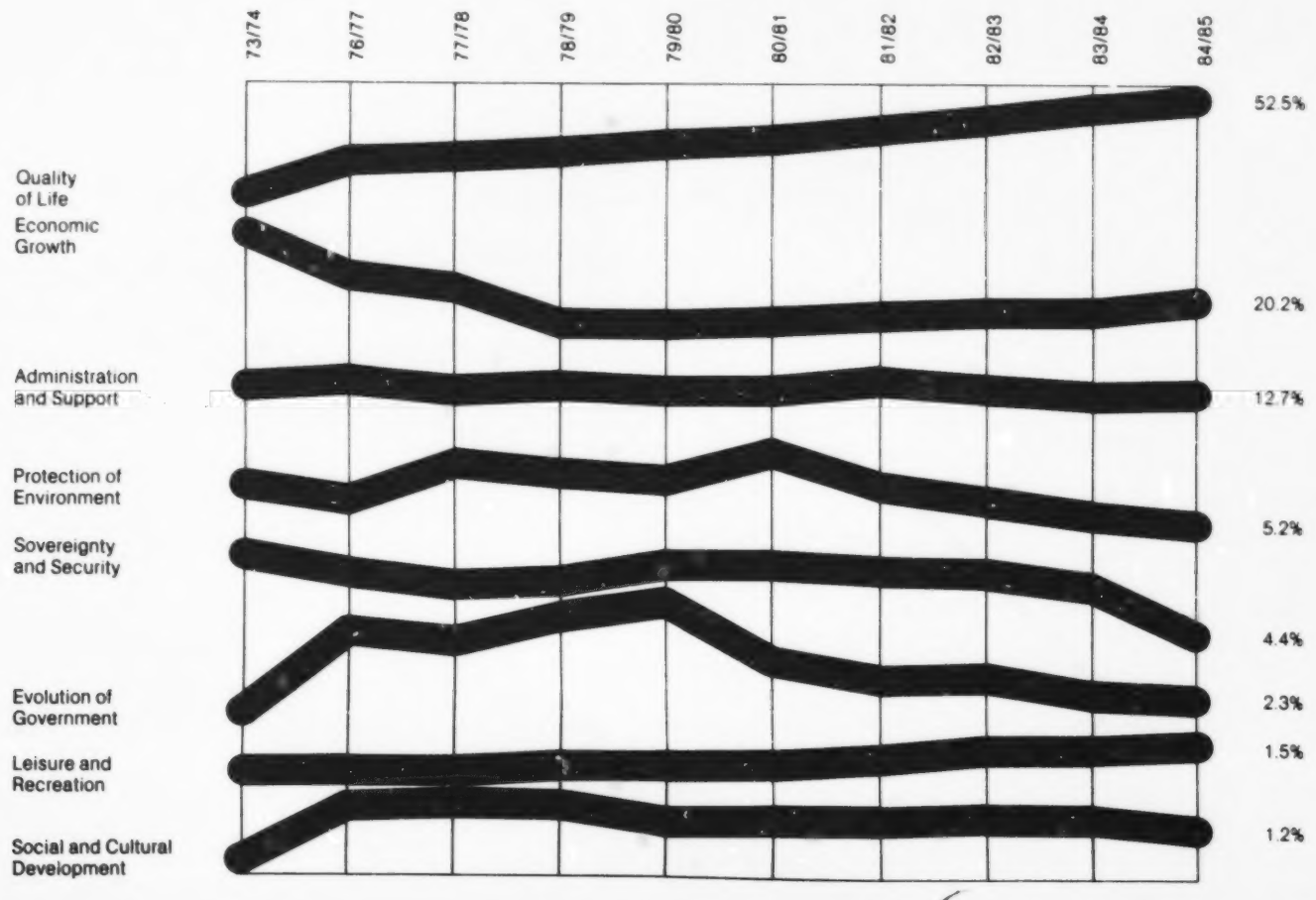
The category *Administration and Support* includes activities which contribute to the Northern Objectives by supporting other activities which contribute to these objectives (construction and maintenance of government buildings, financial and personnel services, etc.). In accordance with the ANEP survey methodology, these expenditures are identified separately rather than arbitrarily pro-rated among the other activities.

The following table indicates the overall dollar and percentage distribution of total expenditures among the Northern Objectives for various years. Trends in expenditure distributions over the ten-year period are indicated graphically below.

Trend in Expenditure ($ millions) and Percentage Distribution (%) by Northern Objective

Northern Objective	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
	$	%	$	%	$	%	$	%	$	%
Total Spending:										
Quality of Life	152.8	*43.2*	497.6	*48.7*	605.5	*51.4*	711.2	*52.5*	750.0	*52.5*
Economic Growth	86.2	*24.4*	186.8	*18.3*	211.4	*17.9*	263.8	*19.5*	288.5	*20.2*
Admin and Support	51.5	*14.6*	144.9	*14.2*	163.8	*13.9*	171.1	*12.6*	182.0	*12.7*
Sov and Security	24.9	*7.1*	64.2	*6.3*	71.5	*6.1*	64.1	*4.7*	62.6	*4.4*
Protection of Environ	20.1	*5.7*	62.3	*6.1*	69.7	*5.9*	77.6	*5.7*	74.6	*5.2*
Evolution of Gov't	9.2	*2.6*	28.3	*2.8*	28.6	*2.4*	31.5	*2.3*	33.1	*2.3*
Soc and Cult Devel	4.9	*1.4*	23.3	*2.3*	14.8	*1.2*	17.7	*1.3*	17.0	*1.2*
Leisure and Rec'n	3.6	*1.0*	13.6	*1.3*	13.8	*1.2*	18.8	*1.4*	20.8	*1.5*
Total	**353.2**	***100.0***	**1,021.0**	***100.0***	**1,179.1**	***100.0***	**1,355.8**	***100.0***	**1,428.6**	***100.0***

Trend in Expenditure ($ millions) and Percentage Distribution (%) by Northern Objective



The following table provides the dollar and percentage allocations to the Northern Objectives for each of the Federal, NWT and YT governments. The objectives are in descending order based on the 1984/85 planned allocations of each government.

As noted previously, Administration and Support expenditures generally support more than one ANEP activity. For this reason they are identified separately, rather than arbitrarily pro-rated to other activities. The extent to which expenditures are allocated to this category depends largely on the accounting systems and organizational structures of individual reporting agencies. As such, the data do not provide a valid basis for making inter-agency comparisons of Administration and Support expenditures.

Trend in Expenditure ($ millions) and Percentage Distribution (%) by Northern Objective

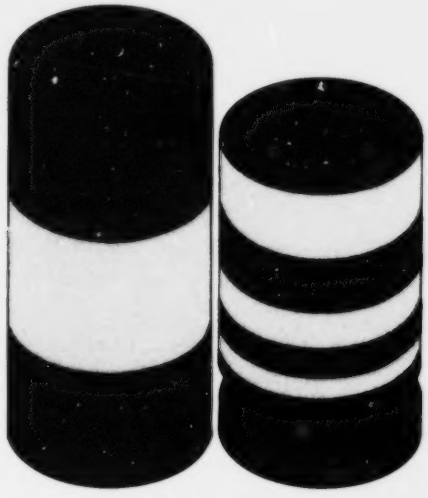
Northern Objective	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
	$	%	$	%	$	%	$	%	$	%
Federal:										
Quality of Life	62.8	*31.9*	182.9	*36.8*	217.3	*39.0*	278.5	*43.1*	294.5	*42.5*
Economic Growth	66.4	*33.7*	131.9	*26.6*	152.9	*27.5*	184.8	*28.6*	210.3	*30.3*
Protection of Environ	18.6	*9.5*	53.9	*10.8*	60.9	*10.9*	67.1	*10.4*	64.8	*9.4*
Sov and Security	24.9	*12.6*	64.2	*12.9*	71.5	*12.9*	64.0	*9.9*	62.6	*9.0*
Admin and Support	16.5	*8.3*	32.2	*6.5*	30.9	*5.6*	25.8	*4.0*	34.2	*4.9*
Soc and Cult Devel	4.5	*2.3*	21.4	*4.3*	12.9	*2.3*	15.2	*2.3*	14.6	*2.1*
Leisure and Rec'n	1.3	*0.6*	7.0	*1.4*	6.9	*1.2*	7.5	*1.1*	8.5	*1.2*
Evolution of Gov't	2.1	*1.1*	3.3	*0.7*	3.2	*0.6*	3.8	*0.6*	4.0	*0.6*
Total Federal	**197.1**	***100.0***	**496.8**	***100.0***	**556.5**	***100.0***	**646.7**	***100.0***	**693.5**	***100.0***
NWTG:										
Quality of Life	70.0	*60.6*	244.6	*61.6*	305.8	*63.6*	345.2	*64.0*	365.4	*64.6*
Admin and Support	29.9	*25.9*	97.9	*24.7*	115.1	*24.0*	122.8	*22.8*	124.6	*22.0*
Economic Growth	8.2	*7.1*	33.9	*8.5*	36.6	*7.6*	41.8	*7.8*	45.4	*8.0*
Evolution of Gov't	4.1	*3.6*	9.6	*2.4*	10.9	*2.3*	11.4	*2.1*	11.8	*2.1*
Leisure and Rec'n	1.8	*1.6*	5.0	*1.2*	5.3	*1.1*	9.6	*1.8*	10.5	*1.9*
Protection of Environ	1.2	*1.0*	4.7	*1.2*	5.3	*1.1*	6.2	*1.1*	6.2	*1.1*
Soc and Cult Devel	0.2	*0.2*	1.4	*0.4*	1.4	*0.3*	2.0	*0.4*	2.0	*0.3*
Total NWTG	**115.4**	***100.0***	**397.0**	***100.0***	**480.4**	***100.0***	**539.0**	***100.0***	**565.9**	***100.0***
YTG:										
Quality of Life	20.0	*49.0*	70.2	*55.1*	82.4	*58.0*	87.4	*51.4*	90.1	*53.2*
Economic Growth	11.6	*28.6*	21.1	*16.6*	21.9	*15.4*	37.2	*21.9*	32.8	*19.4*
Admin and Support	5.1	*12.6*	14.7	*11.6*	17.8	*12.5*	22.5	*13.2*	23.3	*13.7*
Evolution of Gov't	3.0	*7.5*	15.5	*12.2*	14.5	*10.2*	16.3	*9.6*	17.2	*10.2*
Protection of Environ	0.3	*0.7*	3.7	*2.9*	3.6	*2.5*	4.4	*2.6*	3.6	*2.1*
Leisure and Rec'n	0.5	*1.2*	1.6	*1.2*	1.6	*1.1*	1.8	*1.0*	1.8	*1.1*
Soc and Cult Devel	0.2	*0.4*	0.4	*0.4*	0.4	*0.3*	0.5	*0.3*	0.5	*0.3*
Total YTG	**40.7**	***100.0***	**127.2**	***100.0***	**142.2**	***100.0***	**170.1**	***100.0***	**169.3**	***100.0***

Expenditure by Economic Function

Each ANEP is allocated to one of thirteen Economic Functions. However, certain activities (e.g. long range research) are treated as special items and are excluded from the chart and table. The distribution of the total expenditures planned for 1984/85 among the twelve other Economic Functions is displayed in the chart below.

Planned Expenditure ($ millions) for 1984/85 by Economic Function

Total Spending: $1,428.6



General Government Services $335.5

Transportation $213.4

Welfare $208.2

Health $176.4

Education $137.5

Economic Development Other $114.4

Local Government $75.9

Defence $50.5

Culture and Recreation $38.4

Other:

2.3% Economic Development (Human)	$33.5
1.9% Short Range Research	$26.5
1.3% Communications	$18.4

Trend in Expenditure ($ millions) and Percentage Distribution (%) by Economic Function

Economic Function	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
Total Spending:	$	%	$	%	$	%	$	%	$	%
General Gov't Services	78.8	*22.3*	245.5	*24.0*	275.0	*23.3*	305.0	*22.5*	335.5	*23.5*
Transportation	75.4	*21.4*	149.6	*14.7*	165.2	*14.0*	196.7	*14.5*	213.4	*14.9*
Welfare	39.0	*11.0*	126.1	*12.4*	160.8	*13.6*	211.6	*15.6*	208.2	*14.6*
Health	26.8	*7.6*	107.8	*10.6*	145.8	*12.4*	158.0	*11.7*	176.4	*12.4*
Education	41.4	*11.7*	109.6	*10.7*	129.6	*11.0*	132.1	*9.7*	137.5	*9.6*
Economic Development (Other)	23.7	*6.7*	80.9	*7.9*	91.7	*7.8*	112.8	*8.3*	114.4	*8.0*
Local Government	15.8	*4.5*	62.6	*6.1*	66.3	*5.6*	71.2	*5.3*	75.9	*5.3*
Defence	13.9	*3.9*	41.6	*4.1*	46.4	*3.9*	53.4	*3.9*	50.5	*3.5*
Culture and Recreation	6.5	*1.9*	29.4	*2.9*	26.8	*2.3*	34.0	*2.5*	38.4	*2.7*
Economic Development (Human)	6.9	*1.9*	26.3	*2.6*	31.2	*2.6*	38.5	*2.8*	33.5	*2.3*
Short-Range Research	17.7	*5.0*	20.8	*2.0*	24.2	*2.1*	25.4	*1.9*	26.5	*1.9*
Communications	7.3	*2.1*	20.8	*2.0*	16.1	*1.4*	17.1	*1.3*	18.4	*1.3*
Total	**353.2**	***100.0***	**1,021.0**	***100.0***	**1,179.1**	***100.0***	**1,355.8**	***100.0***	**1,428.6**	***100.0***

1983/84 Forecast Expenditure By Spending Agency and Economic Function ($000's)

Economic Function / Spending Agency	Education	Health	Welfare	Transportation	Communications	Economic Development (Human)	Economic Development (Other)	Defence	Local Government	Short-Range Research	Culture and Recreation	General Government Services	Total
Federal Agencies:													
CMHC	-	-	13,826	-	-	-	-	-	-	12	-	-	13,838
CBC	-	-	-	-	-	-	-	-	-	-	-	-	-
Communications	-	-	-	-	712	-	-	-	-	-	-	-	712
Emp. & Imm	-	-	44,905	-	-	19,980	176	-	-	-	-	-	65,061
EMR	-	-	-	-	-	-	159	-	-	5,675	-	9,473	15,307
Environment	-	-	-	-	-	-	-	-	-	6,997	13,255	17,603	37,855
Fed. Judicial Affairs	-	-	-	-	-	-	-	-	-	-	-	400	400
Finance	-	-	-	-	-	-	-	-	-	-	-	-	-
Fisheries & Oceans	-	-	2,408	-	-	-	71	-	-	7,174	-	-	9,653
DIAND	3,446	-	5,336	22,047	-	6,805	69,095	-	4,067	2,519	-	22,941	136,256
Justice	-	-	-	-	-	-	-	-	-	-	-	1,118	1,118
Labour	-	-	-	-	-	93	-	-	-	-	-	550	643
National Defence	-	-	-	-	-	-	-	53,429	-	3,054	-	7,161	63,644
Health & Welfare	-	72,930	24,093	-	-	-	-	-	-	-	250	-	97,273
National Museums	-	-	-	-	-	-	-	-	-	-	275	-	275
National Revenue	-	-	-	-	-	-	-	-	-	-	-	1,526	1,526
Nor. Pipeline Agency	-	-	-	288	-	-	-	-	-	-	-	-	288
Post Office	-	-	-	-	16,356	-	-	-	-	-	-	-	16,356
PSC	-	-	-	-	-	2,988	-	-	-	-	-	468	3,456
Public Works	-	-	-	12,525	-	-	-	-	-	-	-	11,630	24,155
RIE	-	-	-	-	-	-	8,588	-	-	-	-	-	8,588
RCMP	-	-	-	-	-	-	-	-	-	-	-	32,756	32,756
Sec. of State	-	-	-	-	-	-	-	-	-	-	7,457	213	7,670
Transport	-	-	-	109,400	-	-	-	-	-	-	-	21	109,421
Veterans' Affairs	-	-	552	-	-	-	-	-	-	-	-	-	552
Total Federal Government	3,446	72,930	88,712	146,668	17,068	29,766	78,089	53,429	4,067	25,431	21,237	105,860	646,703
Government of the NWT	94,323	64,278	107,175	19,213	-	8,683	20,272	-	52,186	-	10,550	162,312	538,992
Government of the Yukon	34,333	20,841	15,759	30,806	-	-	14,392	-	14,936	-	2,253	38,797	170,117
Total	**132,102**	**158,049**	**211,646**	**196,687**	**17,068**	**38,449**	**112,753**	**53,429**	**71,189**	**25,431**	**34,040**	**304,969**	**1,355,812**

Appendix I

Northern Canada Power Commission

The following information has been extracted from the 35th Annual Review (for the year ended March 31, 1983) of the Northern Canada Power Commission.

The Northern Canada Power Commission is a Federal Crown Corporation which operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis.

The Commission is the principal producer of electricity north of 60° and operates the main transmission networks in the Yukon and Northwest Territories. Heat, water and sewerage service utilities are operated at Inuvik, N.W.T. Wholesale heat supply is provided to the Northwest Territories Government for distribution at Frobisher Bay.

It is a requirement of the Authorizing Act that operations of the Commission shall be self-sustaining within each rate zone as defined in the Act. Consequently, rates charged for utilities supplied must provide sufficient revenue to cover interest and principal payments on loans made to the Commission, operating, maintenance, administrative and all other expenses, and contingency allowances.

Statement of Operations for the Year Ended March 31:
($ millions)

	1973/74 Total	1979/80 Total	1980/81 Total	1981/82 Total	1982/83 Total
Income	15.6	49.1	55.9	73.4	79.3
Expenses	11.9	35.1	42.4	59.0	57.2
Interest on Loans	3.3	14.0	13.9	14.0	14.8
Net Income (Loss)	0.4	0.0	(0.4)	0.4	7.3
Number of Employees	*311*	*304*	*330*	*327*	*342*

Appendix II

Northern Transportation Company Limited
(and subsidiary companies)

The following information has been extracted from Annual Reports of the Northern Transportation Company Limited, (1973 to 1982).

Northern Transportation Company Limited has operated throughout the Mackenzie River system for 49 years, along the Western Arctic coast and islands for 26 years, and along the west coast of Hudson Bay for eight years. The company's marine operations have been the principal mode of transportation for community freight needs and logistic support for oil, gas and mineral exploration and development. The marine operations are complemented by Grimshaw Trucking and Distributing Ltd., a wholly-owned trucking subsidiary.

Consolidated Statement of Income and Expenses*
for the year ended December 31:
$ (millions)

	1973	1979	1980	1981	1982
Income					
– Operating Revenue	16.4	31.5	34.4	42.0	43.1
– Parliamentary Appropriation**	-	0.8	0.8	0.6	1.1
– Other (Interest, Capital Gains)	0.1	2.0	2.9	3.9	3.3
	16.5	34.3	38.1	46.5	47.5
Expense					
– Operating	18.3	28.9	30.7	39.8	38.4
– Other (Interest on Debt)	2.3	3.1	3.0	3.0	2.9
	20.6	32.0	33.7	42.8	41.3
Net Profit (Loss) before deferred Income Tax	(4.1)	2.3	4.4	3.7	6.2
Less Income Tax (Credit)	(2.1)	0.2	2.1	3.5	2.0
Net Profit (Loss)	(2.0)	2.1	2.3	0.2	4.2
Number of Employees	*1,127*	*763*	*713*	*738*	*768*

* *Principles of Consolidation* – The consolidated financial statements include the accounts of the company and its subsidiaries, Northern Offshore Limited (formerly Yellowknife Transportation Company Limited) and Grimshaw Trucking and Distributing Ltd., both of which are wholly-owned.

** *Parliamentary Appropriation* – Parliament approved these payments to the company to defray the excess of costs incurred over revenue earned from the Keewatin resupply operations (1975 to 1982) and Great Bear Lake resupply operation (1978-1981). 1982 figures relate only to Keewatin resupply.

In Conclusion

Serious readers requiring more detailed information for research purposes may order copies of the internal *Annual Northern Expenditure Plan* by writing to:
Indian and Northern Affairs Canada
Northern Policy Directorate
Ottawa, Ontario K1A 0H4

Readers interested in further information on the range of government activities and programs in the North might also send for the following publications:

Annual Report — DIAND

Northern Natural Resource Development: Requirements, Procedures and Legislation

A Guide to Territorial Land Use Regulations

A Survey of Public Review Hearings in Northern Canada

The Lancaster Sound Region: 1980-2000, (The Green Paper)

Mines and Minerals Activities

Oil and Gas Activities

by writing:
Public Enquiries
Indian and Northern Affairs Canada
Ottawa, Ontario K1A 0H4